

- | | |
|---|---|
| <i>h. f.</i> Head of femur. | <i>R. F.</i> Rectus femoris. |
| <i>i.</i> Ilium. | <i>Rm.</i> Retrahentes costarum. |
| <i>i. c.</i> Interclavicle. | <i>R. P.</i> Rectus posticus. |
| <i>I. C.</i> Intercostales. | <i>S.</i> Subscapularis. |
| <i>i. f.</i> Internal condyle of femur. | <i>S. A¹ & 2.</i> Serratus anterior. |
| <i>in. c.</i> Interarticular cartilage of knee-joint. | <i>S. C.</i> Sterno-coracoidalis. |
| <i>i. p.</i> Ischio-pubic ligament. | <i>Sc.</i> Scalenus anticus. |
| <i>I. S.</i> Infraspinitus. | <i>sc'.</i> Suprascapula. |
| <i>is.</i> Ischium. | <i>S. H.</i> Sterno-hyoid. |
| <i>i. s. l.</i> Ilio-ischiatic ligament. | <i>S. H'.</i> Sterno-hyoideus profundus. |
| <i>L.</i> Longissimus dorsi. | <i>S. L.</i> Supinator longus. |
| <i>L. A.</i> Levator scapulae. | <i>S. M.</i> Sterno-mastoid. |
| <i>L. D.</i> Latissimus dorsi. | <i>Sn.</i> Semimembranosus. |
| <i>m.</i> Mandible. | <i>S. P.</i> Serratus posterior. |
| <i>Ma.</i> Maxilla. | <i>Sp.</i> Spinalis dorsi. |
| <i>M. H.</i> Mylo-hyoid. | <i>Sr.</i> Sartorius. |
| <i>N.</i> Neuro-mandibularis. | <i>sr.</i> Transverse processes of sacrum. |
| <i>O. E.</i> Obturator externus. | <i>Sr. L.</i> Sacro-lumbalis. |
| <i>O. H.</i> Omo-hyoid. | <i>S. S.</i> Supraspinatus. |
| <i>O. I.</i> Obturator internus. | <i>St.</i> Sternum. |
| <i>P.</i> Pectoralis major. | <i>S. T.</i> Semitendinosus. |
| <i>pa.</i> Parietal. | <i>T.</i> Temporalis. |
| <i>Pc.</i> Pectineus. | <i>t.</i> Tibia. |
| <i>Pd.</i> Pyramidalis. | <i>T. C.</i> Transversalis colli. |
| <i>p f.</i> Postfrontal bone. | <i>t. h.</i> Tuberosity of humerus. |
| <i>P. M.</i> Platysma myoides. | <i>T. M.</i> Trachelo-mastoid. |
| <i>P. P.</i> Peronæus primus. | <i>T. P.</i> Tibialis posticus. |
| <i>Pp.</i> Popliteus. | <i>Tr.</i> Triceps, outer head. |
| <i>P. R.</i> Pronator radii teres. | <i>Tr¹.</i> Triceps, long head. |
| <i>P. S.</i> Peronæus secundus. | <i>Tr².</i> Triceps, inner head. |
| <i>pt.</i> Pterygoid bone. | <i>Tr. P.</i> Transversus perinæi. |
| <i>P. T.</i> Pelvo-tibialis. | <i>T. T.</i> Tensor tympani? |
| <i>py.</i> Pyriformis. | <i>Tz.</i> Trapezius. |
| <i>Q. F.</i> Quadratus femoris. | <i>x.</i> Xiphisternum. |
| <i>r.</i> Raditis. | <i>x.</i> Tendons of intercostals. |
| <i>R.</i> Rectus abdominis. | <i>u.</i> Ulna. |
| <i>R. A.</i> Rectus anticus. | <i>V. E.</i> Vastus externus. |
| <i>R. C.</i> Retractor cloacæ. | <i>V. I.</i> Vastus internus. |

February 20, 1872:

Professor Flower, F.R.S., V.P., in the Chair.

The following report by the Secretary on the additions to the Society's Menagerie during the month of January 1872 was read:—

The total number of registered additions to the Society's Menagerie during the month of January 1872 was 95, of which 2 were by birth, 42 by presentation, 39 by purchase, 6 by exchange, and 6 received on deposit. The total number of departures during the same period, by death and removals, was 83.

The most noticeable additions during the month were:—

1. A young specimen of the King Penguin (*Apterodytes penanti*) from the Falkland Islands, presented to the Society by Mr. F. P. Cobb, Manager of the Falkland Islands Company at Port Stanley. The bird (which arrived on January 9th, under the kind

charge of Mr. W. H. Hyde, R.N., of H.M.S. 'Reindeer') was still in the nestling plumage (of a uniform drab brown), and at first appeared likely to do well, but very shortly died.

2. On the 18th the Council agreed to purchase a young female Giraffe belonging to Mr. Rice, which has been in the Society's custody since the 12th of October 1871. With this addition the Society's stock of Giraffes now consists of two pairs, namely :—(1) an old female, born in the Society's Gardens on the 25th of April 1853 ; this animal has already bred in our Gardens, and, looking to her age, can hardly be expected to breed more than once again ; (2) a young male, offspring of No. 1, born in the Gardens March 17th, 1867 ; (3) a young male, purchased of Mr. Rice January 5th, 1870 ; and (4) the young female just purchased, as above mentioned.

The list of Giraffes which have lived in the Society's Gardens will now stand as follows* :—

List of Giraffes which have lived in the Zoological Society's Gardens.

No.	Sex.	How acquired.	Date.	How disposed of.	Date.
1	Female	Imported	May 24, 1836	Died	Oct. 15, 1852
2	Male	Imported	May 24, 1836	Died	Oct. 29, 1846
3	Male	Imported	May 24, 1836	Died	Jan. 14, 1849
4	Male	Imported	May 24, 1836	Died	Jan. 6, 1837
5	Male	Born	June 19, 1839	Died	June 28, 1839
6	Male	Born	May 24, 1841	{ Presented to Dub- lin Zoological Soc. }	June 14, 1844
7	Male	Born	Feb. 25, 1844	Died	Dec. 30, 1853
8	Male	Born	Apr. 22, 1846	Died	Jan. 22, 1867
9	Male	Born	Feb. 12, 1849	Sold	Apr. 27, 1850
10	Female	Imported	June 29, 1849	Died	Nov. 3, 1856
11	Female	Imported	June 29, 1849	Sold	Oct. 29, 1853
12	Male	Born	Mar. 30, 1852	Sold	Mar. 29, 1853
13	Female	Born	Apr. 25, 1853	Living in the Gardens.	
14	Female	Born	May 7, 1855	Destroyed by fire	Nov. 6, 1866
15	Female	Born	July 16, 1859	Died	Dec. 2, 1859
16	Female	Born	May 20, 1861	Sold	May 1, 1863
17	Male	Born	Oct. 7, 1861	Died	Dec. 18, 1861
18	Male	Born	May 8, 1863	Sold	Nov. 8, 1863
19	Male	Born	Sept. 24, 1863	Died	Apr. 21, 1864
20	Male	Born	Mar. 31, 1865	Died	Apr. 3, 1865
21	Female	Born	Apr. 20, 1865	Sold	May 31, 1866
22	Male	Born	Sept. 14, 1866	Destroyed by fire	Nov. 6, 1866
23	Male	Born	Mar. 17, 1867	Living in the Gardens.	
24	Male	Purchased.	Jan. 5, 1871	Living in the Gardens.	
25	Female	Purchased.	Jan. 18, 1872	Living in the Gardens.	

3. A collection of Land-Tortoises, presented to the Society by Dr. G. Grey of Cradock, Cape of Good Hope, consisting of twenty-three specimens belonging to the following species :—

Testudo pardalis, Bell, from Cradock.

Chersina angulata (Schweigg.), from Cradock.

Homopus areolatus (Thunb.), from Cradock.

Testudo semiserrata, Smith, from the Diamond-districts.

* See P. Z. S. 1867, p. 392.

We are greatly indebted to Dr. Grey for the pains which he has taken in getting together this series of African Tortoises, in which he informs me he has received great assistance from Mr. T. C. Scanlen, M.P. for Cradock, Cape Colony, South Africa. The two last-named species are new to the Society's collection.

In my report for January last year (see P. Z. S. 1871, p. 102) I called attention to the presence in the Society's collection of a New-Zealand Ground-Parrot (*Stringops habroptilus*), which had been deposited on the 24th of that month by Capt. R. Peek of the ship 'Mary Shepherd.' I have now the pleasure of announcing that the bird in question has been most liberally presented to us by Mr. D. L. Murdoch of Auckland, New Zealand. Of this (one of the most wonderful, perhaps, of all living birds) a specimen has been once before in the Society's Gardens (see P. Z. S. 1870, p. 798); but the present is the first that has actually belonged to us. The *Stringops* is most strictly nocturnal in its habits, and never emerges from the box in which it is kept, voluntarily, during daylight. Our specimen has no power of flight, but uses its wings to aid it in running. It is fed upon oats, apples, lettuce, carrots, and other vegetables, and appears to thrive well upon this diet.

The Secretary announced the addition to the Society's collection of a fine female specimen of the Sumatran Rhinoceros (*Rhinoceros sumatrensis*, Cuv.) from Chittagong, which had been purchased of Mr. Wm. Jamrach on the 15th inst. for the sum of £1250.

The following papers were read:—

1. Notes on the Visceral Anatomy of the Hippopotamus.

By JOHN W. CLARK, F.Z.S.

[Received February 20, 1872.]

The Hippopotamus (*Hippopotamus amphibius*) on whose visceral anatomy I am going to make a few remarks was born in the Society's Gardens on January 7th. It died on the following Wednesday, and was sent to Cambridge, where it was examined by Prof. Humphry, Mr. B. Anningson of Caius College, and myself, with the view, in the first instance, of ascertaining the cause of death. The animal was a female, weighed 87 lbs., and measured, from tip of snout to tip of tail, 3' 10". We found the thoracic viscera perfectly healthy, and normally disposed. The abdominal viscera were equally healthy, as far as each separate viscus was concerned; but there were numerous adhesions. The stomach was firmly attached to the posterior wall of the abdominal cavity; and the spleen was so closely adherent, under a fold of peritonæum, to the inferior surface of the stomach, that it was some time before we could find it. The omentum also, in a few places, adhered to the intestines*. In the stomach we found

* I make these statements with considerable diffidence, as our knowledge of the normal anatomy of *Hippopotamus* is so scanty. I have thought it best, however, to retain them as originally written, because they record the impressions made upon us at the time of dissection.

a small quantity of milk—part of the goat's milk that had been swallowed a few hours before death. There was a good deal of mæconium in the lower part of the bowel, and also a quantity of thickened matter of a yellowish colour that had all the appearance of being the fæcal residue of milk; but on this point it is difficult to speak with certainty. On the whole, I am of opinion that death was caused by want of nutriment—a result due to the abnormal conditions of the birth, which have been the same, so far as I am aware, in all the recorded instances of Hippopotami born in captivity.

Subsequently I made a more detailed examination of the different viscera. In this work I have been greatly aided by my assistant Mr. T. W. Bridge; and I have also had the benefit of the advice and suggestions of Professor Humphry.

The anatomy of the Hippopotamus was first investigated by Daubenton*, who dissected a fœtus, and gave figures of the external and internal disposition of the stomach. I am loath to find fault with a man so painstaking as Daubenton was; but I must confess that it is very difficult, if not impossible, to learn any thing from his figures, even with the actual stomach before you. Eighty-three years elapsed before any thing further of importance was done; and then Gratiolet's elaborate monograph† appeared, published after his death by Dr. Alix. He had dissected at least two individuals—a male and a female; and Dr. Alix had the opportunity of verifying his statements upon a third, that died at the Jardin des Plantes while he was arranging the MS. for publication. Excellent as this work is, there are still some points that need correction, and one at least (which I shall discuss presently) about which further information is requested by the author. The Hippopotamus that was burnt at the Crystal Palace in 1866 was dissected by Dr. Crisp, who recorded some of his observations in the Society's 'Proceedings'‡. It will be seen that the above researches have all been made on either fœtal specimens or very young animals, the oldest being that dissected by Dr. Crisp, aged fourteen months and a few days. The only record of the dissection of an adult is by Prof. Peters§, but is unfortunately very brief; what information he does give is extremely valuable. It is remarkable that nothing should have been done with those that have been born and died at Amsterdam. So far as I can discover, no notices have been published respecting their anatomy; it does not even appear that they have been dissected.

The few points that I shall dwell upon are, of course, only those that have been inadequately or erroneously noticed by preceding investigators. I shall be careful not to go again over ground that has been once thoroughly worked.

The *brain* has been described and figured admirably by Gratiolet; there is also a short note on it by Peters. I pass therefore

* In the twelfth volume of Buffon, ed. 1784.

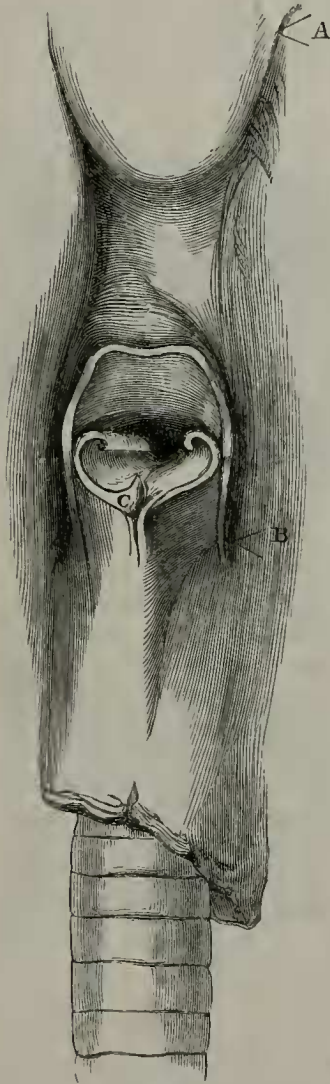
† 'Recherches sur l'Anatomie de l'Hippopotame,' par Louis-Pierre Gratiolet. 4to. Paris, 1867.

‡ P. Z. S. 1867, pp. 601 and 689.

§ Reise nach Mossambique, p. 180.

at once to the mouth. It is remarkable that while the palate, tongue, larynx, trachea, and œsophagus have all been described, the space intervening between the tongue and the œsophagus should

Fig. 1.



Tongue, larynx, and trachea of *Hippopotamus*, two-thirds natural size.

A. Root of tongue. B. Epiglottis. C. Arytenoid cartilages.

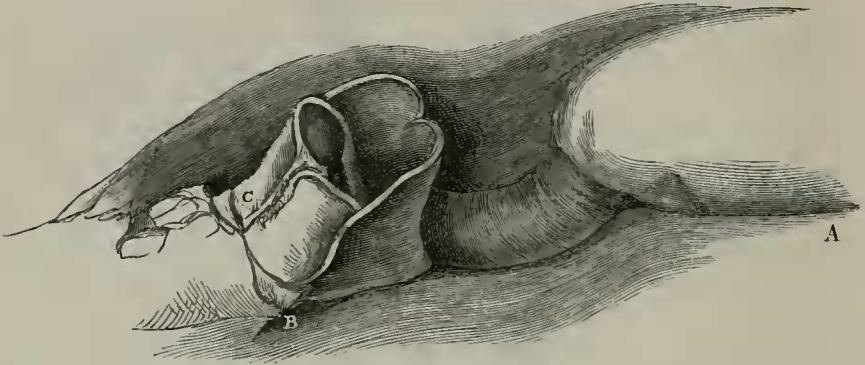
have been passed over almost in silence. Gratiolet* pays but little attention to it; and Dr. Crisp merely notes the similarity

* *L. c.* pp. 307-315. He speaks of the epiglottis being applied to the palate so as effectually to separate the pharynx from the mouth, but does not seem to contemplate the possibility of its being used as I have suggested.

to the same parts in the Porpoise, but gives no description of them. I have drawn the parts in figs. 1 and 2. Fig. 1 represents the back of the tongue with the opening of the larynx, when removed from the mouth and suspended by the tongue; fig. 2, the same parts viewed from the right side.

The root of the tongue is smooth, thick, and very much arched. Between it and the origin of the epiglottis is a space measuring $1\frac{1}{4}$ " in the centre, and 3" at the sides, from A to B. This space is con-

Fig. 2.



Tongue, larynx, and trachea of *Hippopotamus*, viewed from the right side.
A. Root of tongue. B. Epiglottis. C. Arytenoid cartilages.

cave, with a slight ridge in the middle, and furrows to the right and left leading from the sides of the tongue to those of the epiglottis. Between the epiglottis and the wall of the pharynx this channel is very deep and narrow, but capable apparently of considerable dilatation. The epiglottis and arytenoid cartilages combine together to form an elongated tubular structure that resembles in a very striking manner the arrangement of these parts in the Cetacea, and may, I think, be put occasionally to the same use, namely to advance into and close the posterior nares, so as to preserve a free passage for air to the lungs while the mouth of the animal is under water. The epiglottis is $\frac{3}{4}$ " high in front, with a slight depression in the middle. It wraps round the arytenoid cartilages, which are $\frac{1}{2}$ " high behind. It will be seen from the figures that the right cartilage slightly overlaps the left. The tissue that connects them is extremely loose, so as either to allow of their firmly uniting, or of their separating sufficiently to admit a structure between them, such as the *septum narium*, should they be thrust forward into the nostrils. It will be seen that the arytenoid cartilages are curled upon themselves at their outer border within the laryngeal aperture. I find that the aperture of the posterior nostrils will just admit the structure I have attempted to describe.

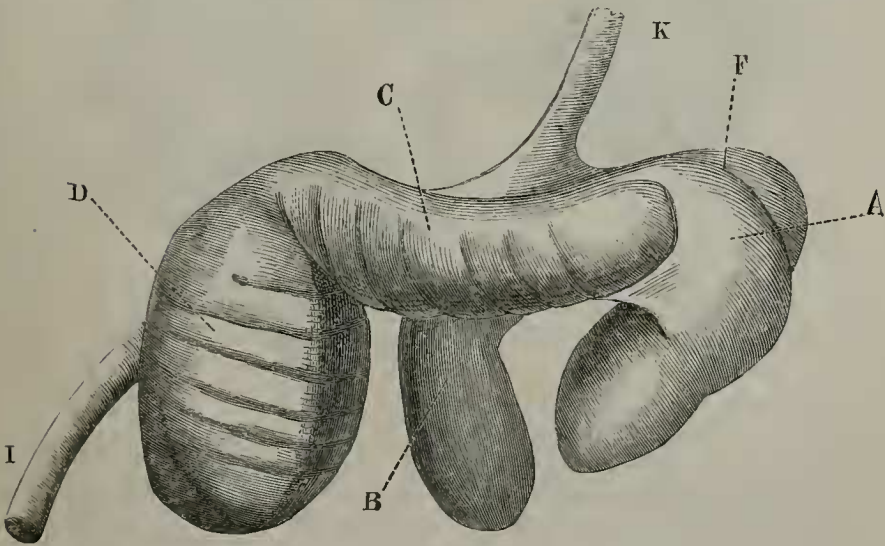
I regret that the animal was so young that the mammæ were scarcely developed, and the mammary gland not at all. It would be interesting to examine whether, in an adult animal, the mammary gland bears any resemblance to that of the Porpoise, where the milk

is collected in a great central reservoir, from which it can be injected into the mouth of the young one while under water.

We now come to the most remarkable viscus in the body—the stomach. This has been described and figured by Daubenton, by Gratiolet, and by Dr. Crisp; but the figures are all so inaccurate as to be nearly useless. I have therefore figured it again in its natural position, after first hardening it in strong spirit. Fig. 3 represents the anterior, fig. 4 the posterior aspect, of one fourth the natural size, and fig. 5 of half the natural size, the interior of the divisions marked A and B. The stomach has been variously described: as a stomach shaped like a colon, with an appendix to the cardiac sac, and a true paunch in front of the sac (Gratiolet); or, as a stomach with three external and four internal divisions (Peters). It seems to me better to describe it at once as a stomach with four divisions, for the separation between the third and fourth portions is most plainly indicated on its external surface, at least in the specimen I am describing. I have distinguished the four divisions by the letters A, B, C, D.

The œsophagus enters immediately above the point of junction of

Fig. 3.

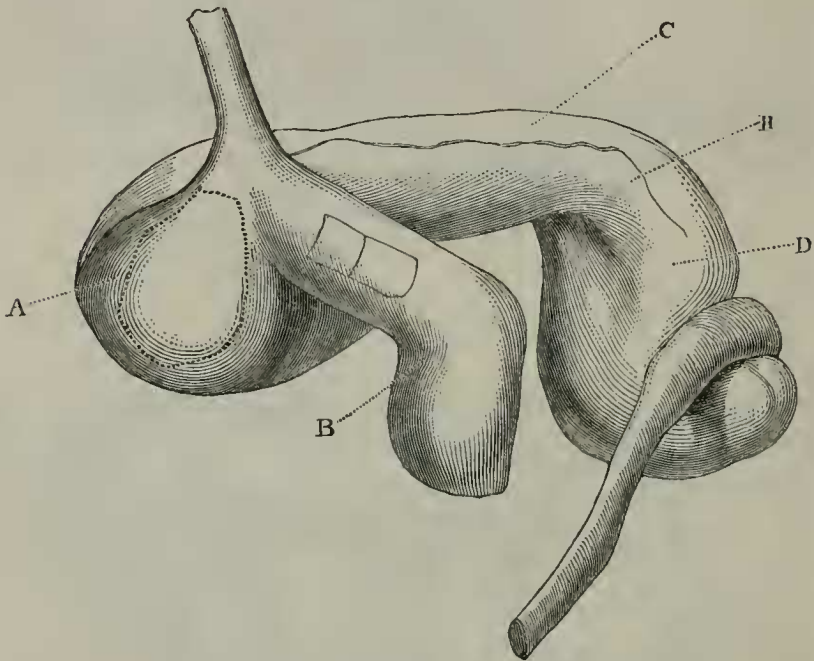


Anterior aspect of the stomach of *Hippopotamus*, one-fourth natural size. A, B, C, D. The four divisions in order. F. Partition in the interior of division A. K. Œsophagus. I. Duodenum.

the divisions A and B. The arrangement of these parts will be better understood by reference to fig. 5. A piece of the wall of the cardiac end has been removed, as shown by the dotted line in fig. 4; and the view is taken right along the central portion of the stomach, from left to right of the animal. The longitudinal folds of the lining membrane of the œsophagus converge and meet upon the edge of a

valve (marked E), which extends along the posterior side of the division A till it meets the partition dividing this portion of the stomach from that which succeeds (C). From the point where these folds touch the edge of the valve a second set are given off, which seem to conduct the food into the division C. There is a second valve, or rather partition, as seen in the figure, extending down the whole length of this sac almost to its apex, and dividing it nearly equally. Its course may be traced externally by a depression on the outside of the stomach, from the point F along the dark line which curves round the cardiac end in fig. 3. The partition between A and C is designated by the letter G.

Fig. 4.



Posterior aspect of the same parts, of the same size.

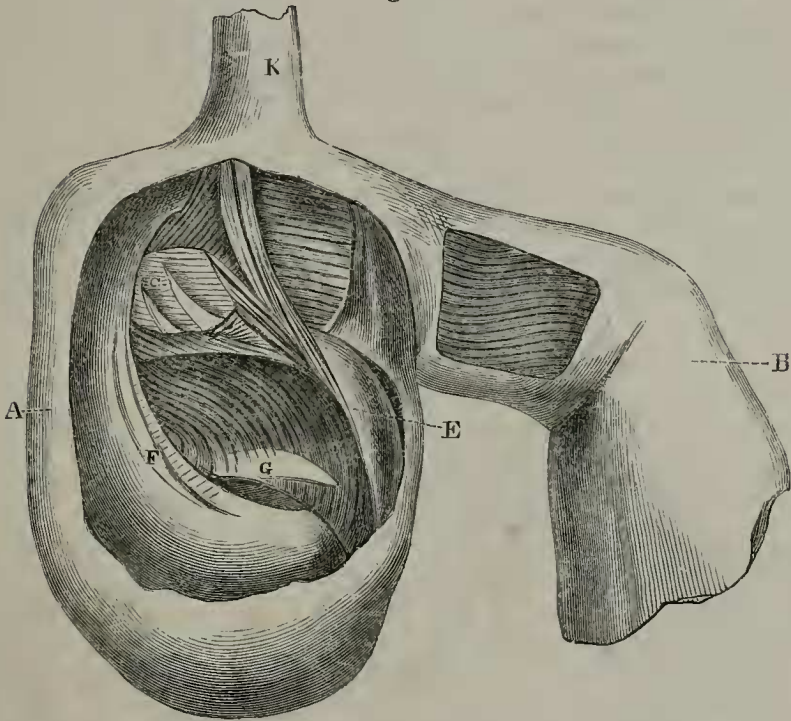
A, B, C, D. The four divisions in order. H. Passage between divisions C and D. The dotted lines on divisions A and B. indicate the extent of the aperture cut in their walls to show their internal structure.

The division B is not subdivided by valves of any kind. Its walls are thick; nearly $\frac{1}{8}$ ", and the villi are very large and coarse, disposed along lines which take the direction shown in fig. 5.

The passage from A to C is narrowed by a partition (G) to $\frac{1}{2}$ " in height. The compartment C is crossed obliquely by eight transverse partitions extending round the lower half of its diameter. The number of these varies: Gratiolet's specimen had nine, Dr. Crisp's seven. Of these, six only are visible on the exterior. The first is attached to the partition dividing this portion from A; and the last is very small, and within the passage leading to D. They are of no great

height: the highest measures barely $\frac{1}{2}$ ", and the lowest $\frac{1}{8}$ ". This portion has a nearly uniform diameter of 3".

Fig. 5.



Internal view of the first and second divisions of the stomach of *Hippopotamus*, half natural size.

A, B. First and second divisions, viewed from the left side. C. Interior of third division. G. Partition between divisions A and C. F. Partition in the interior of division A. E. Valve along the posterior side of the same.

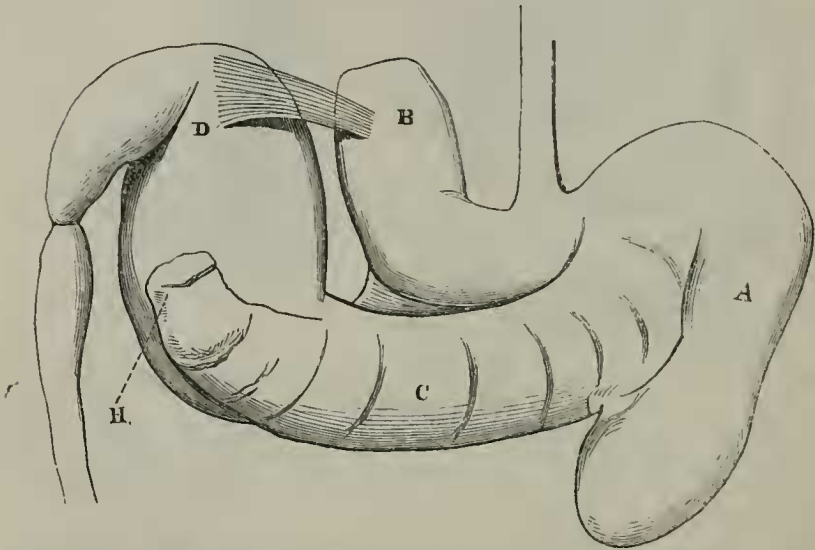
Between the divisions C and D there is a passage, the floor of which measures $2\frac{1}{2}$ " along its anterior edge, $1\frac{1}{2}$ " along its posterior, and is 1" high in the centre. It is marked H on fig. 4, where its course may be seen to extend over the commencement of the last division. This is crossed by nine crescentic transverse bands along its anterior surface, as shown in fig. 3. One only, the third in descending order, is of any extent; it measures 3" from side to side, and 1" in depth at its deepest part. Six only of these are visible on the exterior. The pyloric aperture is marked by an annular constriction $\frac{1}{2}$ " in diameter. Immediately beyond the pylorus the intestine is much dilated for a distance of about 3" (fig. 4).

A microscopic examination of the coats of the different stomachs (kindly undertaken for me by my friend N. H. Martin, Esq., of Christ's College) shows that the villi are of nearly the same shape throughout the first three divisions, being short cylindrical projections, varying somewhat in size and distribution in the different

parts. They are very small and few in number in A; and there are no peptic glands among them. There are no villi upon the large valve in A. In B they are largest and most numerous, interspersed with here and there a few mucous glands. In C they are numerous, disposed in lines that cross the divisions obliquely, but they are not large. In D there are no villi, but tubular peptic glands, like those ordinarily found in that portion of a stomach which secretes the gastric fluid, as in the "abomasus" of a Ruminant.

I have been describing the stomach according to my own specimen; but when I came to examine that of the male that died in the Gardens last year, and which is now preserved in the Museum of the Royal College of Surgeons, I found the most remarkable difference of arrangement. Professor Flower has most kindly allowed me to make a sketch of it (fig. 6), which will explain my meaning at a

Fig. 6.



Stomach of *Hippopotamus*, drawn from the specimen in the Museum of the Royal College of Surgeons.

The letters denote the same parts as in figures 4 and 5.

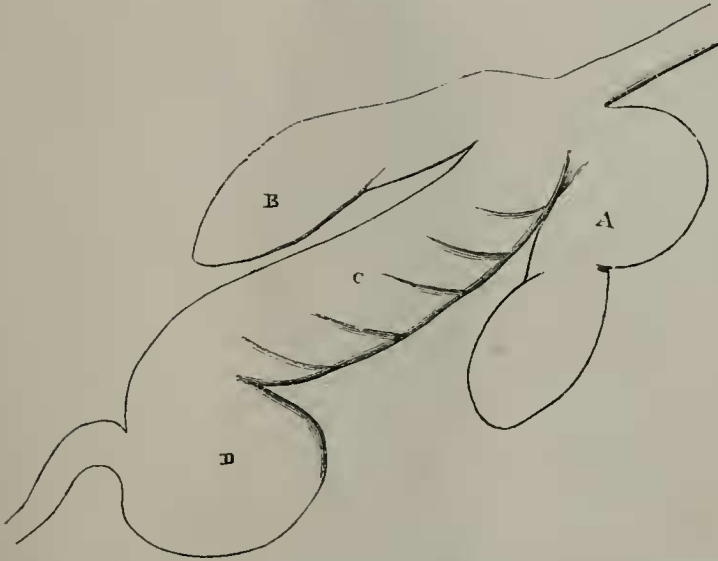
glance. It will be seen that the divisions B and D, instead of being directed downwards, are directed upwards; the passage at the point H is on the under instead of on the upper border; and at the pylorus there is a crescentic valve succeeded by a wide portion of intestine, which presently becomes thickened and contracted, suddenly instead of gradually. An arrangement such as this would seem to be implied by Peters's phrase, "a stomach with three divisions externally and four internally," which he observed in an adult. The arrangement indicated in Gratiolet's figure, which I have reproduced (fig. 7), is intermediate between the two. Division B is not bent upon itself at all, but lies parallel to C; while D is more globular in shape, and

underlies a portion of C. Daubenton's specimen (so far as one can understand his figure at all) resembled mine, except that the last division was much smaller in proportion.

Daubenton makes no mention of the crescentic folds in D; neither does Dr. Crisp. Disappearance with age might account for Dr. Crisp not finding them; but Daubenton's specimen was foetal.

I am unable to offer any reason for this very strange alteration of arrangement. I can only state what I have observed.

Fig. 7.



Stomach of *Hippopotamus*, after Gratiolet, 'Recherches sur l'Anatomie de l'Hippopotame,' pl. ix. fig. 4.

The letters denote the same parts as in the preceding figures.

Intestines.—They measured 49 feet from the pylorus to the anus. On opening the abdomen the small intestines were alone visible. The colon lay beneath them, and was not disposed in spiral folds as it is in some *Pachyderms*. The small intestines are thickly beset with very fine silky villi, $\frac{1}{8}$ " long. There is no cæcum, and no marked division into small and large intestine; but at about 3' 6" from the anus the villi suddenly cease, and the tube dilates considerably. At this part, for about 4" in length, the mucous membrane is puckered into longitudinal folds, which are occasionally crossed by other folds transversely, so as to enclose a number of spaces of irregular size and shape. The floor of these spaces is again subdivided in a similar manner by fresh reduplications of the membrane, producing hollows of the most varied form (some large and some small), so as to give in places, where the size does not exceed that of a small pin's head, an appearance not unlike the orifices of glands. The whole arrangement may, to a certain extent, be compared to the reticulations of the membrane of the intestines of certain

Fig. 8.



Uterus of *Hippopotamus amphibius*.

A. Uterus. D. Vagina. B, C. Lower portion of ditto. E. Clitoris.

fishes, as the Sturgeon and the Frogfish. Dr. Crisp* describes and figures this part, and calls it the "colic gland;" but we could not

* *L. c.* p. 604. Comp. Gratiolet, p. 395, who speaks of "un espace couvert de petits plis entrecroisés qui lui donnent un aspect aréolaire."

discover any glands, after a very minute and careful dissection. The coats of the large intestine are very much thicker than those of the small, and the mesentery is much stouter and stronger. In this specimen it was heavily weighted with fat.

I regret that I omitted to examine the *pancreas*. The *spleen* is flat and elongated, rather broader at one end than at the other, and partially divided into two lobes. It measured $5\frac{1}{2}$ " in length, and 4" in breadth at its widest part. The *liver* has been described and figured by Gratiolet.

Uterus.—Fig. 8 (p. 194) represents this organ laid open. Gratiolet remarks (p. 401), "The uterus has two flexuous, intestiniform horns, opening by a broad orifice into a common cavity of moderate extent, which almost immediately, without the interposition of any distinctly marked neck, becomes the vagina. This vagina presents first a tract covered with circular bands like *valvulæ conniventes*. More than twenty-five of these bands can be counted. Next comes a space covered with longitudinal folds, terminating in a *cul de sac* near the urogenital chamber, without any aperture. Is this imperforation of the vagina constant in female Hippopotami of this age?"

The uterus of my specimen differs in several particulars from that the description of which I have just given. The body of the uterus (A, fig. 8) is very small. There is no proper "os tincæ." The septum between the confluent horns terminates about $\frac{1}{4}$ " in front of the constriction that takes its place. The superior portion of the vagina (that above the point where the longitudinal folds terminate) is marked by thirteen transverse muscular bands, subdivided longitudinally by striations of greater or less depth. These are shallower and more numerous between the bands than on their surface. The bands themselves are thickest at the superior end, where they alternate; that is to say, each band extends only halfway across the vagina, its termination gradually dying into the walls. Possibly these, from their great size and thickness, may perform the functions of an "os." The lower portion from B to C, $2\frac{1}{2}$ " in length, is marked by two prominent diverging rugæ, between and to the sides of which the muscular bands before described are continued, but they are much less definite and distinct. The vagina was perforate; the aperture was small, but admitted a slender probe without difficulty. In front of this aperture are three deep depressions. The central one contains the orifice of the urethra. Those on each side appear to be merely continuations of the deep folds of membrane above. The walls at this part are exceedingly thick, nearly half an inch in breadth. The central portion and front wall of what may be termed the "cloaca" is occupied by the clitoris, the superior surface of which is marked by a deep groove, continuous with the opening of the urethra. On each side of this, above the opening of the rectum, is a deep pit or pouch, 1" long, by $\frac{1}{2}$ " wide and $\frac{1}{2}$ " deep.

2. Contributions to a General History of the *Spongiadæ*.
By J. S. BOWERBANK, LL.D., F.R.S., &c. &c.—Part II.

[Received January 23, 1872.]

(Plates X. & XI.)

GEODIA M'ANDREWII, Bowerbank. (Plate X.)

Sponge massive, sessile; surface even, thickly pitted, hirsute with large and long fusiformi-acerate external defensive spicula, prominently projected; and at the surface with long fusiformi-spiculated porrecto-ternate, and very large attenuato-porrecto-furcated ternate external defensive spicula, slightly projected. Dermis furnished profusely beneath the dermal membrane with minute subspinous cylindro-stellate spicula. Dermal membrane thin and translucent, spiculous; spicula fusiformi-acerate, minute and slender. Connecting spicula attenuato-patento-ternate, very large, and occasionally with the radii furcated; and also attenuato-recurvo-ternate spicula, long and slender, few in number. Oscula small, congregated in an extensive superficial area. Pores congregated in numerous small depressions or pits, furnished with small radiating fasciculi of fusiformi-acerate tension-spicula, and with numerous minute subspinous cylindro-stellate retentive spicula. Skeleton-spicula fusiformi-acerate, very large and long. Interstitial membranes—tension-spicula fusiformi-acerate, small and variable in size; retentive spicula subspinous, cylindro-stellate, very minute. Ovaria subglobose, large, depressed.

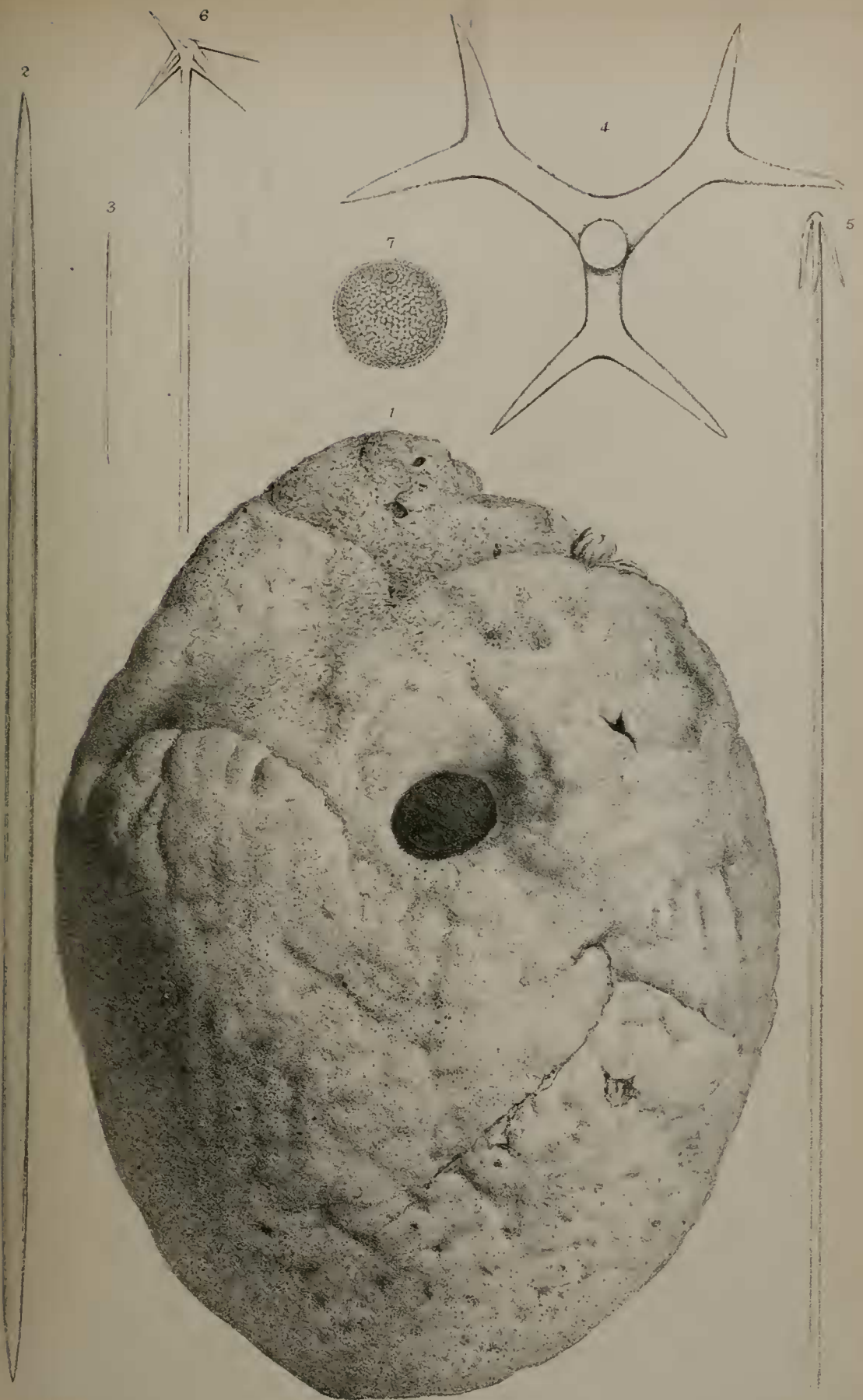
Hab. South side of Vigten Island, Norway, 100 fathoms (*Robert M'Andrew, Esq.*).

Colour. Deep cream-yellow.

Examined in the dried state.

This remarkably fine species was brought up by the dredge of my friend Mr. M'Andrew, from 100 fathoms depth, at the south side of Vigten Island, Norway. In its dried condition it is $10\frac{1}{2}$ inches in length by 9 in width and $5\frac{1}{2}$ inches in height, and has the form of an irregular hemisphere. One end of the mass is depressed into nearly a circular plane, extending from the base line to near the top of the sponge; and the middle of this plane for 5 inches in diameter is occupied by small oscula, rarely attaining a line in diameter, but exceedingly numerous. My late friend Mr. Lucas Barrett, who accompanied Mr. M'Andrew, says that when fresh from the sea it was nearly 18 inches in diameter at the base, and "that the whole of the surface, excepting that part occupied by the oscula, was furnished with long bristle-like spicula, very numerous and as close together as the hairs on a man's head, and that it was extremely heavy and fleshy in its texture." Notwithstanding the partial drying it had undergone during its voyage home, the interior when I received it had much the consistence of indurated liver. I think the specimen comprises nearly the whole of the sponge, and that





the natural base was as extended as the present mutilated one, as the basal fasciculi of the skeleton run uninterruptedly from the centre to the circumference of the present base. Unfortunately the whole of the long surface-spicula were rubbed off during its carriage from Liverpool; but as I carefully preserved all the spicula that I found in the paper in which it was packed, I fully satisfied myself of their structure, and that they were truly from the sponge in question. Beside the large fusiformi-spiculated porrecto-ternate spicula, there are numerous small fusiformi-acerate ones, which connect the dermal membrane with the stratum of ovaries beneath it; but they appear, even in the dried specimen, scarcely to project their apices through the membrane, excepting in the neighbourhood of the pores, around which they project in small radiating fasciculi for a fourth or a third of their length, apparently as organs of defence to those orifices, which are congregated in little pits or depressions, and which give a striking character to the surface of the dried specimen.

The pores vary in form from round to oval, and in diameter from $\frac{1}{461}$ inch to $\frac{1}{231}$ inch; and beneath each group of pores there was an intermarginal cavity, the diameter of the diaphragm at the base of which varied from $\frac{1}{107}$ inch to $\frac{1}{5}$ inch.

The structure of the large fusiform-spiculated porrecto-ternate spicula is new and interesting; the shaft of the spiculum is continued in a straight line, and terminates acutely and at about the length of one of the radii; beneath its apex three radii are given off at equal distances from each other, slightly curving towards the distal points in the direction of about an angle of 45 degrees. The furcated porrecto-ternate spicula are larger and stronger than the porrecto-ternate ones; and the angle at which they curve upwards from the shaft is from about 50 to 60 degrees. The oscula are extremely numerous; although they occupy an area of about 5 inches in diameter they are rarely as much as the eighth of an inch apart: the orifice is level with the surface-plane, and is surrounded by a thin marginal membrane; and the entrance for about the length of its own diameter is cylindrical and perfectly open, but at that point there is situated a stout veil or diaphragm. In some cases this was more or less open; but in the greater number it was firmly and completely closed, the membrane exhibiting numerous concentric rugæ, at the middle of which there was a strong pursing of the tissue. This opaque spot was not always in the centre of the membrane; but it always formed the centre of the concentric lines of rugæ. The lining membrane of the entrance to the osculum was smooth and tense, and exhibited a series of lines at right angles to the long axis of the osculum, indicating the presence of fibrous tissue. On examining the veils or diaphragms at the inner surface they appeared at least twice the diameter of the inner orifice of the osculum, which bevelled slightly inward, like a very shallow funnel, to the outer margin of which the extreme edge of the diaphragm was firmly attached, thus readily allowing of an opening of the membrane to the full extent at least of the diameter of the cylindrical outer tube of the osculum. The interstitial membranes were singularly crowded

with extraneous matter—Polycystina? Foraminifera, grains of sand, and the spicula of other sponges were abundant amidst the proper fusiformi-acerate spicula of the membranes; and the cylindro-stellate spicula of the sarcode were very abundant. The ovaries are very large and have the form of a depressed sphere, very closely resembling an orange in shape, the foramen being situated in the position that the attachment to the stalk would be in the orange. An average-sized one measured $\frac{1}{100}$ inch in diameter, while a full-sized one of *G. Barretti* measured only $\frac{1}{333}$ inch in diameter. The skeleton-spicula are very large, frequently a quarter of an inch in length.

I cannot better name this fine species of *Geodia* than by dedicating it to my friend Mr. M'Andrew, to whose spirited and constant exertions to extend our knowledge of marine natural history the scientific world are deeply indebted, and whose kindness and liberality has been extended to every one who has the pleasure of knowing him and who are engaged in pursuits similar to his own.

GEODIA BARRETTI, Bowerbank. (Plate XI.)

Sponge massive, sessile; surface even, both strongly and minutely hirsute, with more or less of large fusiformi-acerate spicula, and universally with small fusiformi-acerate spicula projecting at right angles from one sixth to one eighth of their length; and profusely, beneath the dermal membrane, with minute cylindro-stellate spicula. Dermal membrane thin, translucent, aspiculous. Connecting spicula attenuato-furcated patento-ternate, stout; and attenuato-recurvo-ternate, long and slender. Oscula congregated in deeply depressed areas, veiled, numerous and small. Pores inconspicuous, minute, dispersed. Skeleton-spicula fusiformi-acerate, large. Interstitial membranes—tension-spicula fusiformi-acerate, small, variable in size, abundant; retentive spicula cylindro-stellate, minute. Ovaria much depressed.

Hab. South side of Vigten Island, Norway, 100 fathoms (*Robert M'Andrew, Esq.*).

Colour. Deep cream-yellow.

Examined in the fresh state.

I am indebted to my kind friend Mr. M'Andrew for three fine specimens of this species. One is of a semilunate form, $8\frac{1}{2}$ inches in length, 5 inches in breadth, and 2 inches in depth, and it is evidently only a portion of a much larger specimen. The second one is of a somewhat oval form, $5\frac{1}{2}$ inches in length, 4 inches in breadth, and $3\frac{1}{2}$ inches in height, and is the one figured. The third one is $5\frac{1}{2}$ inches high, $4\frac{1}{2}$ inches broad, and 2 inches thick, and is very unlike in form to the first two specimens. The surface is very much more undulating, and it is only in some of the depressed portions of this specimen that we have any indication of the large spicula which render those parts of the surface so extraordinarily villous. In these spots the spicula, which exceed the eighth of an inch in length, are so abundant that they completely cover and obscure the surface of the sponge, from which they project nearly the whole of their length,

the proximal ends of many of them scarcely passing through the dermal crust of the sponge. On the more exposed parts of the sponge only a very few were to be found; and, what is very remarkable, some of the deepest and most protected depressions were equally destitute of them.

In the first specimen, when the two parts into which it was divided were put together, there were the remains of two very large depressed areas, and one smaller but perfect one; the latter was nearly circular, with gradually rounded edge, and at the level of the outer surface was $1\frac{1}{2}$ inch in diameter, and $\frac{3}{4}$ inch deep. The bottom of this area was crowded with small oscula, none of which exceeded half a line in diameter. Remains of the same cribriform arrangement of the oscula was apparent in the portions of the larger areas; and in these some of the oscula were as much as a line in diameter. In the second specimen there is but one, large, nearly circular, depressed area, which decreased in size from 1 inch at the surface-level to $\frac{5}{8}$ inch at its smallest diameter; half an inch within the level of the surface it expanded into a great oval cavity 2 inches deep from the surface-level; and the whole of the interior, from immediately within the level of the greatest contraction of the orifice, was lined with closely packed oscula, presenting the same cribriform arrangement as in the specimen first described. Nearly all of the oscula in both specimens were closed by a stout membranous veil. When a portion of these oscula were immersed in water and examined by transmitted light with a power of 260 linear the membranous veils were seen to be depressed below the level of the surrounding margin, faint concentric lines or ridges were apparent, and a thickening and pursing of the membrane near the middle of the area was visible. From the marginal ring of the oscula numerous small fusiformi-acerate dermal spicula were projected for about a fourth or a third of their length; and deeper within the margin a few were projected for at least three fourths of their length: this projection of spicula is apparently to prevent the intrusion of vermes or other predaceous animals; and both by structure and position they are admirably adapted for such a purpose.

The depressions immediately above the intermarginal cavities, which appear like pores in the dried specimen, are barely visible with an inch lens; and in a portion of the first specimen described, which was preserved in salt and water immediately on being taken from the sea, they were not in the slightest degree visible with the same power.

The dermal membrane covers the external expanded orifices of the intermarginal cavities. It is perforated by numerous minute pores equally dispersed over the surface, and which apparently have the power of opening or closing at the will of the animal. When a portion of the crustular dermis was cleared from the connecting spicula, so as to expose both the outer and inner surfaces to view, and then mounted in Canada balsam, many of the pores were found in an open condition; but in the specimen preserved in salt and water none could be detected in that state.

The orifices to the open pores in the dermal membrane varied in diameter from $\frac{1}{545}$ inch to $\frac{1}{1250}$ inch. Immediately beneath the dermal membrane there is a stratum of sarcode filled with minute cylindro-stellate spicula. This stratum forms about two fifths of the entire thickness of the dermal crust, which is connected with the mass of gemmules beneath by the fusiformi-acerate spicula of the dermal crust. The distal points of these spicula pass through the dermal membrane, while their proximal ones are embedded in the outer surface of the ovarian stratum, which forms about three fifths of the entire thickness of the crust.

The stratum of sarcode filled with minute cylindro-stellate spicula appears to perform a very important part in the economy of the animal. It is traversed by minute canals at various angles, each canal being connected at one end with a pore, and terminating at the other in the expanded distal extremity of an intermarginal cavity. The cylindro-stellate spicula, strengthening and supporting the sarcode stratum, are exceedingly minute; they vary in their extreme diameter from $\frac{1}{3000}$ to $\frac{1}{6666}$ inch. The length of the fusiformi-acerate spicula is $\frac{1}{64}$ inch.

The arrangement of the ternate connecting spicula at the inner surface of the crustular coat is exceedingly interesting: they occur in a series of bundles; the long attenuated shafts of each fasciculus approximate at their bases and diverge thence until the ternate head of each is about equally distant from its surrounding neighbours; and the extremities of the rays touch or slightly cross each other, thus forming a beautiful regular angular network, the meshes being six or seven-sided according to circumstances. The upper surfaces of the radii are firmly attached to, or partially embedded in, the under surface of the crustular stratum. Within each of these areas there is usually to be seen the proximal end of one of the intermarginal cavities.

The intermarginal cavities exhibit a high degree of organization; they are in form not unlike a bell, the proximal end being at the inner surface of the crustular dermis, and the distal one at the inner surface of the stratum of sarcode and stellate spicula immediately beneath the dermal membrane, and towards which it gradually increases in its diameter; the proximal end of one measured $\frac{1}{273}$ inch in diameter, and the distal end $\frac{1}{144}$ inch. These cavities are lined throughout their length with a stout transparent membrane; and at the proximal end of each cavity there is a strong membranous diaphragm, which in the greater number of cases was in a closed state; in this condition the membrane was filled with concentric circles composed of minute rugæ or thickened lines, and at the centre was closely pursed together, completely closing the orifice. In some the membrane was only partially closed, and the orifice was either circular or slightly oval; and in two instances in the same field of view the orifices were nearly as large as the basal opening of the bell-shaped cavity, and the central margin of each diaphragm at its proximal end was dense, highly coloured, and much thicker than at the other parts of the membranes. The pursing of the membrane

of the diaphragm was always outward, so that when viewed from within it presented a slightly funnel-shaped depression, the bottom of which was conical.

A section at right angles to its surface of one of the diaphragms mounted in Canada balsam measured $\frac{1}{1276}$ of an inch in thickness, being at least eight or ten times that of the lining membrane of the cavity. The recurvo-ternate spicula always accompany the expando-ternate ones; but their grapnel-like heads rarely appear to reach the inner surface of the dermal crust, and I did not observe in any case that their heads were immersed in the stratum of gemmules. The recurved radii of these spicula are remarkably long. Occasionally, but very rarely, a porrecto-ternate spiculum was found among the recurvo-ternate ones.

The skeleton-spicula are large and stout; they were collected in large and continuous fasciculi running from the basal centre to the surface of the sponge, where they unite with the attenuated shafts of the connecting spicula. The cylindro-stellate spicula of the sarcode of the interstitial membranes are in great abundance; they are precisely the same in form and size as those immediately beneath the dermal membrane. The gemmules, or ovaria, in the dermal crust are mostly in an exhausted or solid state; occasionally on the outer surface of the stratum there are a few in a prolific condition. They are also abundantly dispersed over the interstitial membranes of the interior; and in that part of the sponge the greater number of prolific ones are to be found. They may be there seen in all degrees of development; the young and imperfectly developed ones appear always to be surrounded by a proper membrane, within which they are embedded in a mass of pulpy or sarcodous matter. Considering the foramen to be the top of the gemmule, their form is that of a sphere considerably depressed, so that viewed in profile they present quite an oval form. The diameter of an adult one measured was $\frac{1}{338}$ inch.

The anatomy of this remarkable species exhibits an amount of elaborate structural peculiarities that could scarcely be imagined to exist in a creature hitherto considered to be among the lowest in the scale of created beings.

DESCRIPTION OF THE PLATES.

PLATE X.

Geodia M'Andrewii, Bowerbank.

- Fig. 1. Represents the type specimen, half the natural size, in its present dried condition.
- Fig. 2. About half of one of the large fusiformi-acerate defensive spicula, magnified 80 linear.
- Fig. 3. A spiculated porrecto-ternate external defensive spiculum, magnified 80 linear.
- Fig. 4. One of the large attenuated porrecto-furcated ternate external defensive spicula, magnified 80 linear.
- Fig. 5. A minute subspinous cylindro-stellate spiculum from the dermal membrane of one of the porous areas, magnified 530 linear.

- Fig. 6. One of the small fusiformi-acerate tension-spicula from the dermal membrane of one of the porous areas, magnified 80 linear.
- Fig. 7. A large attenuato-patento-ternate connecting spiculum, magnified 80 linear.
- Fig. 8. A furcated attenuato-patento-ternate connecting spiculum, magnified 80 linear.
- Fig. 9. One of the recurvo-ternate spicula from immediately beneath the external crust of the sponge, magnified 80 linear.
- Fig. 10. About half of one of the large fusiformi-acerate skeleton-spicula, magnified 80 linear.
- Fig. 11. An ovary from the external surface of the sponge, magnified 108 linear.
- Fig. 12. The foramen of one of the ovaries, showing the funnel-shaped disposition of the spicula, magnified 308 linear.

For further illustration of the structure of the ovaries of this sponge I must refer the reader to the 'Philosophical Transactions of the Royal Society' for 1862, pl. xxxiv. figs. 2, 3, 4, 5, 6:—Fig. 2 representing an ovarium in very nearly an adult state, magnified 183 linear. Fig. 3. A small portion of the surface of an adult ovarium, exhibiting the foramen, magnified 308 linear. Fig. 4. A portion of a young ovarium with the distal points of its spicula acutely terminated, not being fully developed, magnified 308 linear. Fig. 5. A section through nearly the centre of a mature ovarium, showing the radiation of its spicula from near the centre to its circumference, magnified 308 linear. Fig. 6. Two ovaria, (a) containing about the maximum of ova, (b) after a great part of the ova have been discharged, magnified 108 linear.

Figures similar to those referred to in the 'Philosophical Transactions' may also be seen in 'Monograph of British Spongiadæ,' vol. i. figs. 325–329.

PLATE XI.

Geodia Barretti, Bowerbank.

- Fig. 1. Represents the type specimen of the species, natural size.
- Fig. 2. One of the large fusiformi-acerate spicula, representing both the large external defensive and the skeleton-spicula, magnified 80 linear.
- Fig. 3. One of the small fusiformi-acerate spicula which form the secondary system of external defensive spicula, magnified 80 linear. These spicula are identical with the tension-spicula of the interstitial membranes, the same figure serving to represent both.
- Fig. 4. The head of one of the large attenuato-furcated patento-ternate connecting spicula, abundant immediately beneath the dermal crust of the sponge, magnified 80 linear. The shafts of these spicula are rather stouter and nearly twice the length of the skeleton ones; they are frequently one sixth or one fifth of an inch in length.
- Fig. 5. An attenuato-recurvo-ternate spiculum of the normal form, magnified 80 linear. The heads of these spicula are subject to frequent distortions.
- Fig. 6. Represents one of the most singular of the numerous distortions of the heads of the recurvo-ternate spicula, the radii in which are double the usual number, magnified 80 linear. By an oversight of the artist, a figure of the minute cylindro-stellate retentive spicula of the dermal and interstitial membranes has been omitted; but a reference to those of *G. M'Andrewii* will afford an accurate idea of their form.
- Fig. 7. One of the ovaria, magnified 250 linear.

For further information regarding the anatomy of this sponge I must refer the reader to the 'Philosophical Transactions of the Royal Society' for 1862—pl. xxxii. fig. 2, for a section of the sponge at right angles to its surface; fig. 3 for a view of a small portion of the dermal crust; and fig. 4 for a group of the inhalant pores. Similar figures will also be found in 'Monograph of British Spongiadæ,' figs. 354, 301, and 302.



J. G. Kevleman's lith

M & N. Hanhart imp

MACACUS BRUNNEUS.

3. On *Felis pardinoides*, J. E. Gray.
By D. G. ELLIOT, F.L.S., F.Z.S., &c.

[Received February 20, 1872.]

In the 'Proceedings' of this Society for 1867, p. 400, Dr. Gray has described a Cat as *Felis pardinoides*, giving as its habitat India. The typical specimen is evidently not an adult animal; and from its resemblance to *F. geoffroyi*, I felt certain, while examining it, that its habitat was not correctly given. During my late visit to Leyden I found another specimen of a Cat, almost precisely similar to Dr. Gray's type, marked as *F. geoffroyi*, and stated to have been brought from Patagonia, the native country of that species. This Leyden specimen (which is also that of a young animal) by the kindness of Prof. Schlegel I have been enabled to remove to London, and thus to identify with the so-called *F. pardinoides*. The young *F. geoffroyi* appears to differ from the adult in the larger size and somewhat different arrangement of the spots, those upon the sides, shoulder, and rump being, as Dr. Gray describes them, "varied with grey hairs in the centre, making them appear somewhat as if they were formed of a ring of smaller black spots." But the general colour of the animal, with its lengthened annulated tail, is precisely that of typical *F. geoffroyi*.

Dr. Sclater has already shown that the *Pardalina warwickii*, Gray, is also *F. geoffroyi* (P. Z. S. 1870). The synonymy of this species will therefore be somewhat as follows:—

FELIS GEOFFROYI.

Felis geoffroyi, D'Orb. Voy. Am. Mérid. t. 13; Gray, P. Z. S. 1867, pp. 272, 400; Gray, Cat. Carn. Mamm. 1869, p. 23; Sclat. P. Z. S. 1870, p. 796.

Leopardus himalayanus, Gray, Cat. Mamm. Brit. Mus. 1842, p. 44.

Pardalina warwicki, Gray, P. Z. S. 1867, p. 267, pl. 24; *id.* Cat. Carn. Mamm. 1869, p. 14.

Felis pardinoides, Gray, P. Z. S. 1867, p. 400; *id.* Cat. Carn. Mamm. 1869, p. 27. sp. 23.

Hab. South America, Patagonia.

4. Further Remarks on the External Characters and Anatomy of *Macacus brunneus*. By JOHN ANDERSON, M.D., Calcutta.

[Received February 6, 1872.]

(Plate XII.*)

Very shortly after I had received the specimen of the Monkey from

* This figure has been prepared by Mr. Keulemans from the living specimens of *Macacus brunneus* received since Dr. Anderson's paper was read. After examining them I have come to the conclusion that this species is not different from *M. arctoides*, Is. Geoffr. Mag. de Zool. 1833, Mamm. pl. 11.—P. L. S.

Bhamô in Upper Burmah from which my original description of this species was taken, I learned through Mr. Oscar Fraser that a tame Monkey had arrived in Calcutta from the hilly region of Cachar. I had the good fortune to secure the specimen for this Society, and to recognize in it the same species as the Bhamô Monkey, from which it only differs in being a little lighter-coloured. Strange to say, this Cachar specimen had not been long in my possession when Lieut. Bourne, whose attention I had called to the subject of Cachar Monkeys, and to whom I had indicated the probability that the Bhamô species might extend as far west as the hilly region of Sylhet and Cachar, sent me a young female with an unclosed fontanelle, which I have also forwarded to you by Mr. Jamrach, who very kindly undertook the care of the two specimens. Mr. Jamrach has also taken with him to London another young female, also from Cachar.

Since my first acquaintance with this Monkey, I have been informed by Mr. Rutledge, the extensive dealer of animals in the city, and who procured Mr. Jamrach's female, that two or three specimens of the species have been sold by him in India without his having recognized them as distinct from *Macacus rhesus*.

All the specimens I have sent you are young; but the person from whom Mr. Fraser procured the second specimen states that the adult is a large Monkey, coloured like the male I have forwarded to London, and that it is not common in Cachar.

As I have already stated in my previous note on this species, I first met with it in the Kakhyen hills to the east of Bhamô, and sent the specimen down to Bhamô to await my return from Western Yunan. On arrival at that town, I learned to my regret that the animal had been beaten to death and buried; but when the second specimen from Bhamô reached me at Calcutta, I almost disbelieved the tale of its death, and thought I recognized my old in my new acquaintance. But the death of the latter has dissipated that supposition, an examination of its teeth and the condition of its skeleton rendering it highly improbable that such was the case; for three years and a half have elapsed since I met with the first specimen, and the second is so young that it has only its milk-teeth—an unlikely circumstance if they had been one and the same individual.

Another Monkey, which appears to be closely allied to so-called *M. brunneus*, accompanies the specimens I have sent you. It is the property of Mr. Jamrach; and all that I have been able to learn of its history is that it was purchased at Singapore. It has the red face, short body, and the rudimentary tail of *M. brunneus*; but, instead of having a brown, it has a bright rufous coat and faintly annulated hair. A young female, evidently the young of this species, has been received in Calcutta from Singapore since Mr. Jamrach's departure, and it only differs from the male in having its rufous fur more or less washed with brownish. If it is not *M. speciosus* from Japan, I know of no other known species to which to refer it; I would indicate it as *M. rufescens* if it prove to be new.

In my first note I was under the impression that my second Bhamô specimen was at least adolescent, if not adult; for it had all the habits

of the latter; but, as I have already indicated, I was wrong in thinking so, and I was really dealing with a young Monkey.

The skull is very thick, the frontal bone, about half an inch above the superciliary margin, measuring 3 lines in thickness. The suture between the frontal and malar bones has entirely disappeared; and that between the squamous and parietal on one side is partially obliterated in its latter third. The lambdoidal, sagittal, and fronto-parietal sutures are intact; but the fontanelle is completely closed.

The principal features of this young skull are its short and full muzzle, the round orbits marked by strong, inwardly projecting supra-orbital processes, the rather broad, triangular surface formed by the nasals, and the regularly triangular orifice formed by the external nares, the contracted zygomatic arch, which is curved slightly inwards and which confers little capacity on the temporal fossa, the broad and globular form of the cranium when viewed from above, and its rather elongated oval shape when seen in profile, and the slightly swollen character of the frontal in the middle line. The short muzzle, contracted zygomata, and globose skull are the characters of youth; but the permanent teeth are well developed, with the exception of the last molar.

Measurements of the skull.

	in.	lin.
Extreme length, from præmaxillæ to occiput	4	2
Eminence of frontal sinus to occiput	3	6
Extreme breadth above roots of zygomata	2	9
Breadth at front of temporal fossa, in a line with upper margin of orbit	2	0
Breadth across malars	2	7
Breadth between internal margins of orbits	2	2
Length of nasals in middle line	1	0
Length of external nares	0	6½
Greatest breadth of nares	0	5
Nasal process of frontals to tip of premaxillaries	1	10
Inner angle of orbit to tip of premaxillaries	1	2
Zygomatic notch of malar to tip of premaxillaries	1	9
Length of zygomatic arch to root of postglenoid process . .	1	4
Greatest breadth of muzzle	1	6
Vertical height of skull on a line with external auditory meatus and anterior margin of foramen magnum	2	2
Posterior margin of palate to anterior margin of foramen magnum	1	3½
Antero-posterior length of foramen magnum	0	8
Posterior margin of foramen magnum to posterior extremity of skull	1	0
Length of palate	1	4½
Greatest breadth of palate	0	10½
Distance between postglenoid processes	2	1
Depth from lower margin of orbit to alveolar border	0	11
Length of lower jaw, from condyle to symphysis	2	8
Depth from tip of coronoid	1	6

	in.	lin.
Breadth of ascending ramus.....	0	11
Breadth under first malar	0	7 $\frac{1}{2}$
Antero-posterior length of symphysis	0	10 $\frac{1}{2}$

With regard to the teeth, both molars of the upper jaw have each four cusps, and the first deciduous tooth is considerably smaller than the second and first permanent molar. In the lower jaw, the first temporary molar is not so markedly quadricuspidate as the corresponding tooth of the upper jaw, and is much narrower than the tooth behind it, which has four cusps. The upper temporary canine has a pyramidal crown internally flattened and externally convex; and in the lower jaw this tooth has a prominent projection on the posterior margin of the base of the crown. The first permanent molar in the upper jaw has four cusps; but in the lower jaw there is a rudimentary cusp on the posterior margin between the two hinder cusps. In the upper jaw the first permanent incisor is the first tooth to appear, and is followed by the first bicuspid. After these teeth are through the gum they would appear to be followed first by the second molar, then by the second bicuspid, and lastly by the canine.

The tongue is oblong, and of nearly equal width throughout. There are only five circumvallate papillæ. On the border of the tongue, external to these papillæ, there are twelve short vertical slits, the external orifices of as many crypts, each of which is separated from its fellow by a very narrow septum, bearing on each of its sides a more or less triangular papillary-looking body, a considerable portion of which is in the crypt; but it also appears externally, and with its fellow of the opposite side almost invests the outer wall of the partition between the two crypts. The most anterior crypt is very shallow, and has a papilla only on its anterior wall. The two posterior crypts are also very shallow, but they each bear two papillæ. The papillæ are broadest below and narrow above, attached to the sides of the septa, but springing, by the apex of the triangle, from the sides of the upper walls of the crypts. These structures, crypts, and papillæ are in a straight line extending over 5 lines. From their position on the sides of the tongue immediately external to the orifices of the buccal pouches, they appear to be specially related to these structures, and have probably a twofold function—the papillæ being gustatory, and the crypts the orifices of numerous glands for the lubrication of the cheek-pouches, while the papillæ doubtless determine whether the food that may have long lain in the buccal sacs or been stored there in haste is fit to be swallowed.

The stomach consists of two portions:—first, a rounded sac which forms the bulk of the organ; and, second, a tubular portion continued on from it to the pylorus, and measuring about 1" 3''' in length and 9''' in breadth. The latter portion describes a well-marked upward curve to the pylorus; and its rather strong internal, muscular coat is prolonged on to near the external margin of the cardiac projection of the globe of the stomach, where it is met by the muscular layer from the left side of the œsophagus, and by muscular fibres which pass

from left to right. The inner surface of the tubular portion, with the exception of its right wall, a concavity, and the continuation of its external muscular coat on to the globe are covered with fine rugæ, and the walls are thick, whilst the remainder of the inner surface is thin and smooth. The form of the stomach thus confers great extension on the lesser curvature.

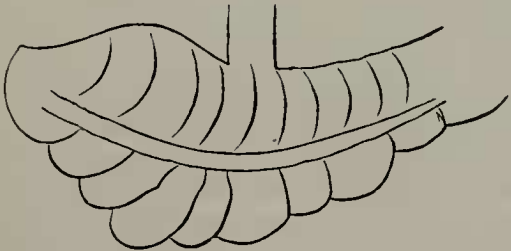
Fig. 1.



Stomach of *Macacus brunneus*, as partially seen from the duodenal end, half nat. size.

The small intestine measures 8 feet in length, while the large intestine is 3 feet 4 inches long. The cæcum, which is 1" 7''' in length, is a simple dilatation to the right of where the small enters the large intestine. It is somewhat pointed externally, and, immediately outside the small intestine, measures 2 inches in diameter, having a greater capacity than the commencement of the large intestine.

Fig. 2.



Cæcum of *Macacus brunneus*, half nat. size.

The spleen measures 1" 5''' in length, 9''' in its greatest breadth, and 4''' in thickness from before backwards. Its right margin is quite straight and flat, whilst its external border curves outwards and downwards as far as the lower two thirds, where it rather abruptly arches inwards and downwards. Its upper extremity is slightly bifid.

The total length of the pancreas, when the gland is laid out, measures 3" 10''', the plane portion forming 2" 8''', and the head 1" 2'''. The head, for about one inch, is firmly attached to the duodenum,

into which it opens close to and only a short way (3 lines) below the bile-duct, and 1" 4''' below the pylorus.

The liver has an extreme breadth of 4" 9''', while the antero-posterior dimension of the middle lobe is 2" 5'''. The left lobe has a general resemblance to the same lobe of the human liver, and is somewhat triangular and much concave on its under surface. The right and left lobes are deeply cut off from the middle or cystic lobe, which is twice as large as the lateral lobes. The anterior margin of its left third is rather deeply cut, and marks the position of the suspensory ligament. The upper surface of the two thirds to the right of the latter is obliquely crossed by a well-defined groove. The right lobe is quadrangular and very slightly larger than the left lobe, and has an elongated triangular lobule, lying on its under surface from within outwards, and above it a tongue-shaped, smaller lobule, placed before and along the external margin of the lesser curvature. These two lobules have a common origin, from which they diverge in opposite directions; and between and above them there is still another and smaller lobule. The middle or cystic lobe is deeply grooved for the gall-bladder, which occupies the middle of its under surface. The gall-bladder is long and of nearly equal width throughout.

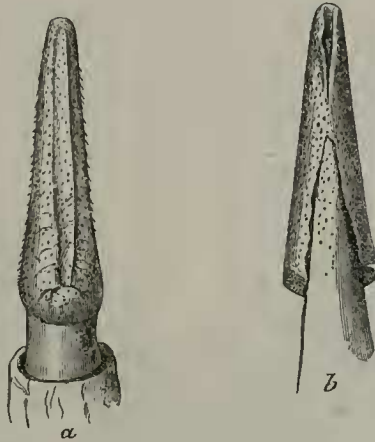
The orifice of the hyoid pouch is immediately above the anterior end of the vocal cords, from which, when the hyoid and epiglottis are divided and the parts are laid aside, the floor of the passage leading into it is seen to be continuous with the convergence of the vocal cords of the two sides. When the larynx is at rest the orifice of the pouch is very small and contracted, and it appears as a mere point at the lower end of the epiglottis; but when the parts are divided it is capable of great distension. The hyoid is much excavated, forming almost an osseous bulla and fully one half of the anterior and superior walls of the pouch, the lower, very distensible wall being formed by a very delicate membrane. The ventricles are only 2''' in depth, and present nothing worthy of remark, beyond that they are simple lateral crypts between the superior, or false, and the true vocal cords.

The right lung is divided into three distinct lobes, while the left only shows two sections. The uppermost lobe, however, of the left lung is deeply incised into two, so that it is almost trilobular. The inferior lobes of the two lungs are of nearly equal size and are pyramidal; but the anterior-inferior margin of the right lobe is incised for the reception of the external lobule of the azygos lung, while that of the left is entire. There is no appreciable difference between the length of the two lungs, the right measuring 3" 2'' and the left 3" 2½'''. The azygos lung is most closely connected with the inferior lobe of the right, and consists of an elongated (1" 6'''), three-sided, and downwardly tapering figure, with a lobule on either side of its attachment, one external and the other posterior. The body and posterior lobule fit in between the two inferior lobules of the right and left lungs, and the external lobule into the incision on the inner side of the inferior lobule of the right lung.

The glans penis is 1" 2''' in length and about 3 lines in breadth at its widest place near the base. The upper surface is marked by a

longitudinal ridge, corresponding to the position of the bone of the organ; and at the upper extremity the skin of the glans is puckered-in about that end of the ridge. The under surface of the glans is marked anteriorly by the elongated leaf-shaped orifice of the urethra, the inferior end of the penis-bone forming the upper and anterior

Fig. 3.



Penis of *Macacus brunneus*: *a*, upper surface; *b*, lower ditto.

wall of the opening, behind which the urethral canal is considerably dilated for 7''', the dilatation being marked, on its upper wall, by a ridge formed by the genital ossicle. The glans is set on at a very obtuse angle to the body of the penis; and the whole surface is covered with small recurved spines, very closely set together, and making the surface quite rough. The spines also pass on to the body of the penis between the two divergent halves of the glans; but in that locality they are much smaller than in the former. The prepuce is attached to the penis 3''' behind the glans. The head of the bone is attached above considerably to the ventral surface of the base of the glans, but at its margin; it curves downwards and forwards, and is exactly one inch long. Its upper half is slightly laterally compressed; but the lower half is cylindrical. The proximal end forms a somewhat rounded head; while the distal end is the narrowest portion.

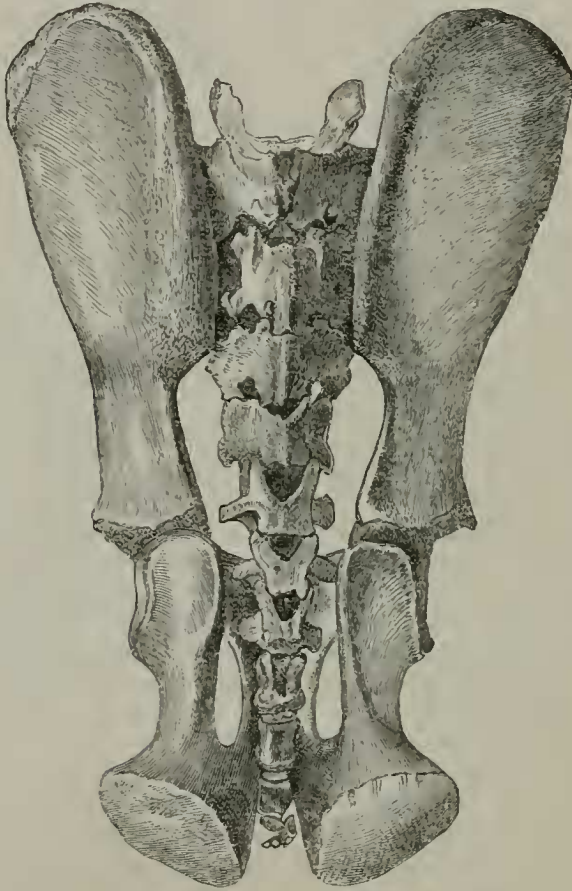
There are twelve dorsal, six lumbar, four sacral, and eleven caudal vertebræ.

Metapophyses appear in the eleventh dorsal vertebra, and are strongly marked in the lumbar region; whilst the anapophyses show in the tenth dorsal—attaining their greatest development in the second, and being reduced to a mere rudiment in the last lumbar. In the last dorsal there is no transverse process, it being resolved into metapophyses and anapophyses.

Only two vertebræ intervene between the ilia; but the anterior
PROC. ZOOL. SOC.—1872, No. XIV.

extremity of the pleurapophysial element of the next vertebra joins the posterior angle of the ilium, and is closely applied to the pleurapophysial process of the second sacral. The fourth sacral has the same form as the third, and has a lateral expansion, apparently serially homologous with the process in front of it and with the well-developed pleurapophysial element of the second iliac vertebra. None of these vertebræ, however, have united; but they have all the appearance as if they were to do so. The third sacral vertebra has a low ridge-like spine; but the fourth has its spinous process reduced to a mere rudiment. The pedicles of the anterior zygapophyses of the second, third, and fourth sacral vertebræ are short, and the facets are almost sessile on the arch.

Fig. 4.

Sacrum and caudal vertebræ of *Macacus brunneus*.

The last caudal vertebra reaches only to the middle of the ischial tuberosity; but only nine out of the eleven appear externally in the

tail. The first four have a little more than one inch of antero-posterior extension; while the last five, being very minute and doubled to the left side as a hook, only extend one line and a half in length. The spinous process of the first caudal is reduced to a minute nodule; while it is more strongly developed in the second and third, preserving, however, the same character that it does in the first, and it is altogether lost in the fifth caudal.

The pedicles supporting the anterior zygapophyses are long and strongly developed on the first caudal; but they gradually become smaller as they are traced to the fourth, and in the fifth they are simple nodules. The anterior and posterior pedicles of the fourth and third vertebræ do not touch each other. The posterior zygapophyses of the third caudal are very small diverging processes, which disappear on the fourth vertebra as a minute eminence at the extremity of a ridge which is serially homologous with the pedicles of the anterior zygapophyses of the anterior caudals. The sixth caudal is a simple ossicle, nearly 2 lines in length; and the seventh is reduced to about one third of its size. The eighth caudal vertebra is a minute ossicle, placed to the right of the axis of the spinal column, with the ninth vertebra slightly to the left of its posterior end—the tenth and eleventh vertebral ossicles being placed transversely, from right to left.

In life the tail is rarely carried erect, and is, as a rule, applied over the anus, its latter fourth being doubled upon itself to the left, and serving to fill up the interspace between the upper divergent portion of the callosities; so that the animal sits on this portion of its tail, the upper surface of which is rough and somewhat callous. The latter fourth of the tail contains the hook-like process formed by the last caudal vertebræ; but they are restricted to its base—the remainder of the organ being tough and tendinous, and destitute of vertebral elements. Here, then, is an instance of a Monkey sitting on its tail; and although it may be that it does not invariably do so, I am prepared to state, after careful observation, that it does so very frequently; and there is the more importance to be attached to this observation, because this habit appears to be a peculiarity of the species.

Associated with this habit, we find a tail with its latter fourth bent upon itself and applied between the callosities, and its upper surface roughened by being sat upon; and moreover we find, when we come to examine its structure, that this bent portion contains only a few rudiments of vertebræ at its base, its greater extent being reduced to a tendinous mass. These facts seem to have only one explanation: this tail, from its short size, is in the Monkey's way when it sits down, and frequently becomes placed under the animal while it is in this attitude; and from the circumstance that it does not extend beyond the extremity of the ischial tuberosities, it seems as if the tail originally had been bent round, by the will of the animal, into the interspace between the callosities to escape being pressed between them and the ground, that, in time, the curvature became permanent, fitting in of itself when the organ happens to be sat upon.

These facts might support Lord Monboddo's theory of the gradual disappearance of tails!

5. General List of the Spiders of Palestine and Syria, with Descriptions of numerous new Species and Characters of two new Genera. By the Rev. O. P. CAMBRIDGE, M.A., C.M.Z.S.

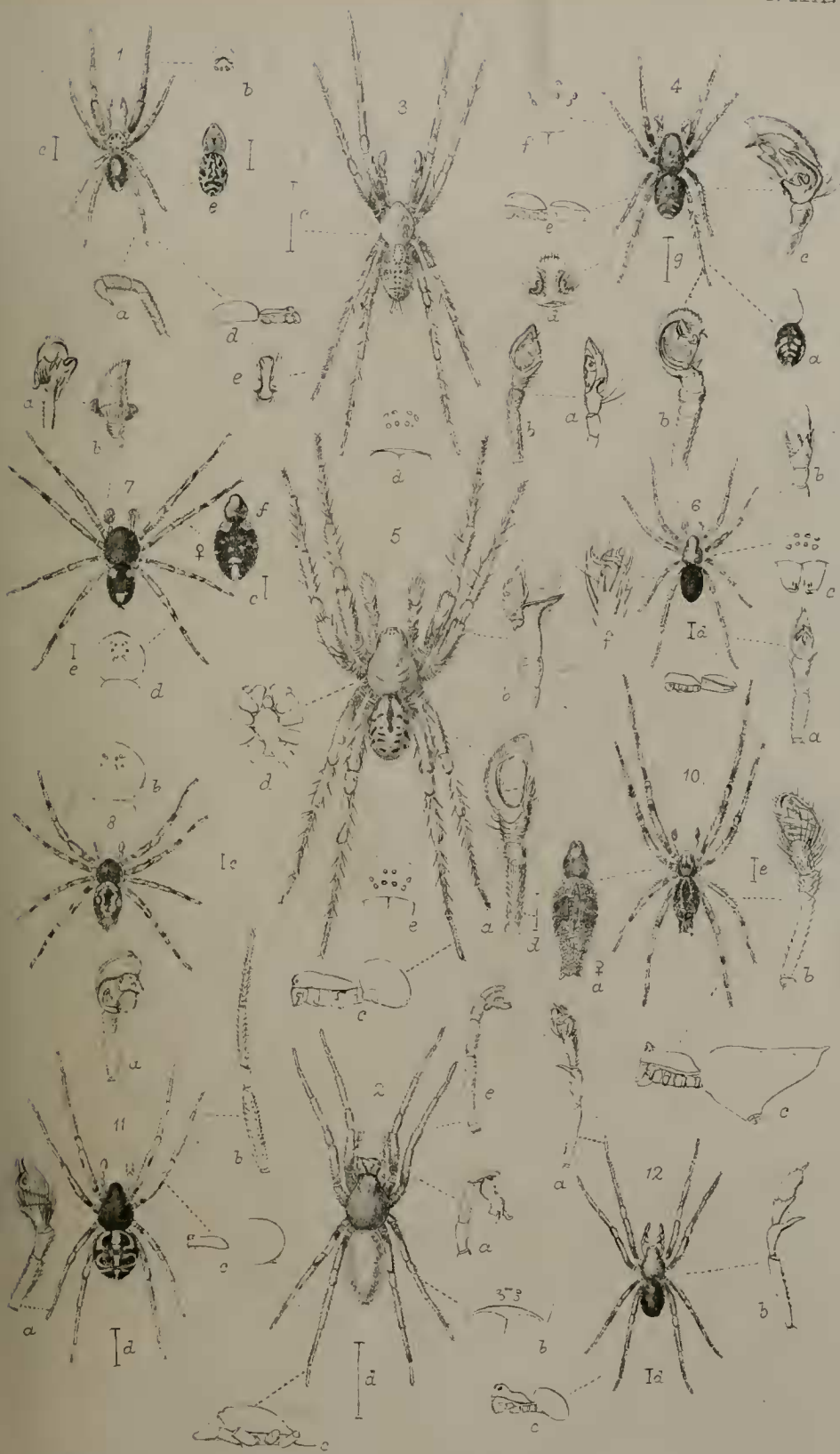
[Received February 2, 1872.]

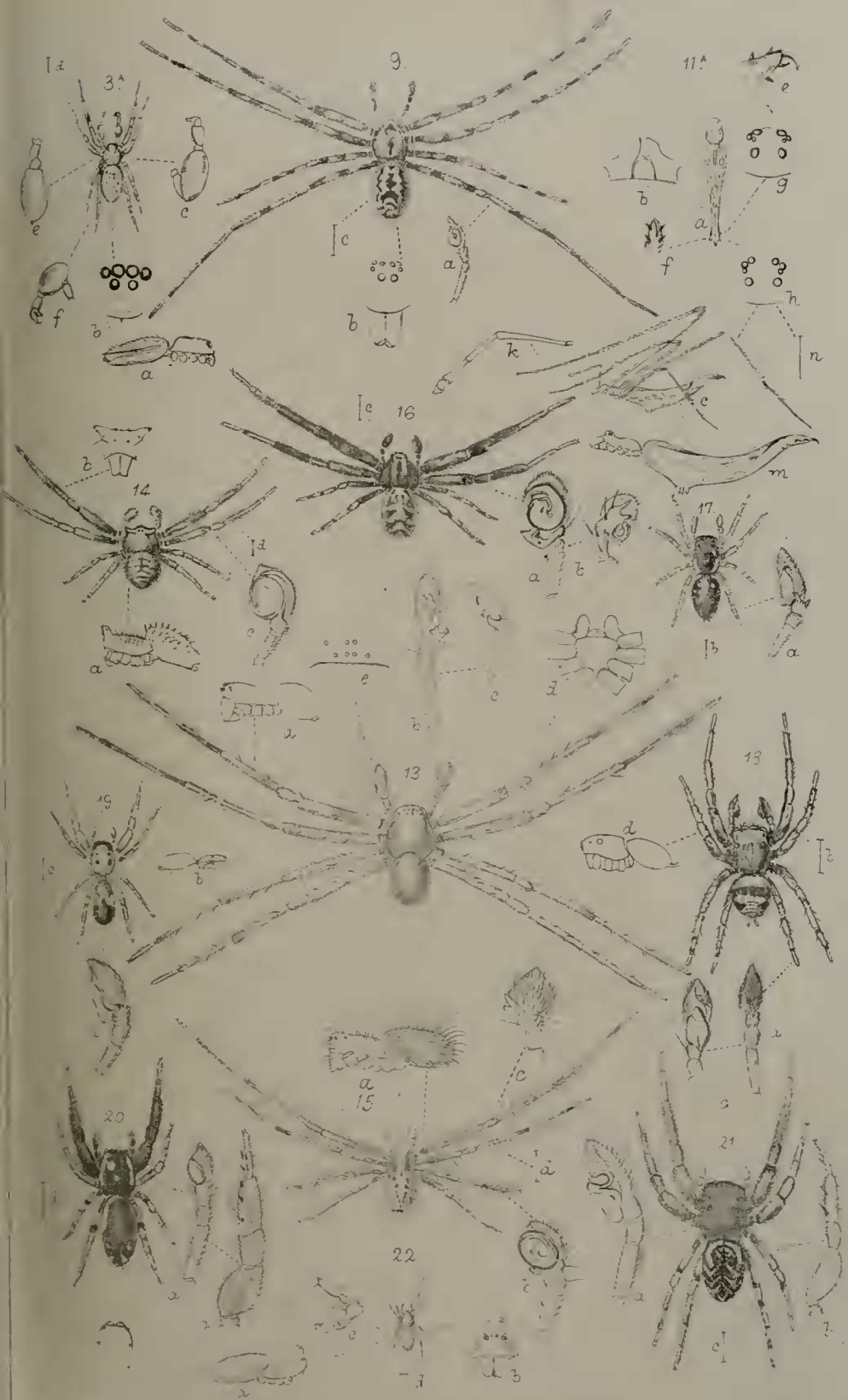
(Plates XIII.—XVI.)

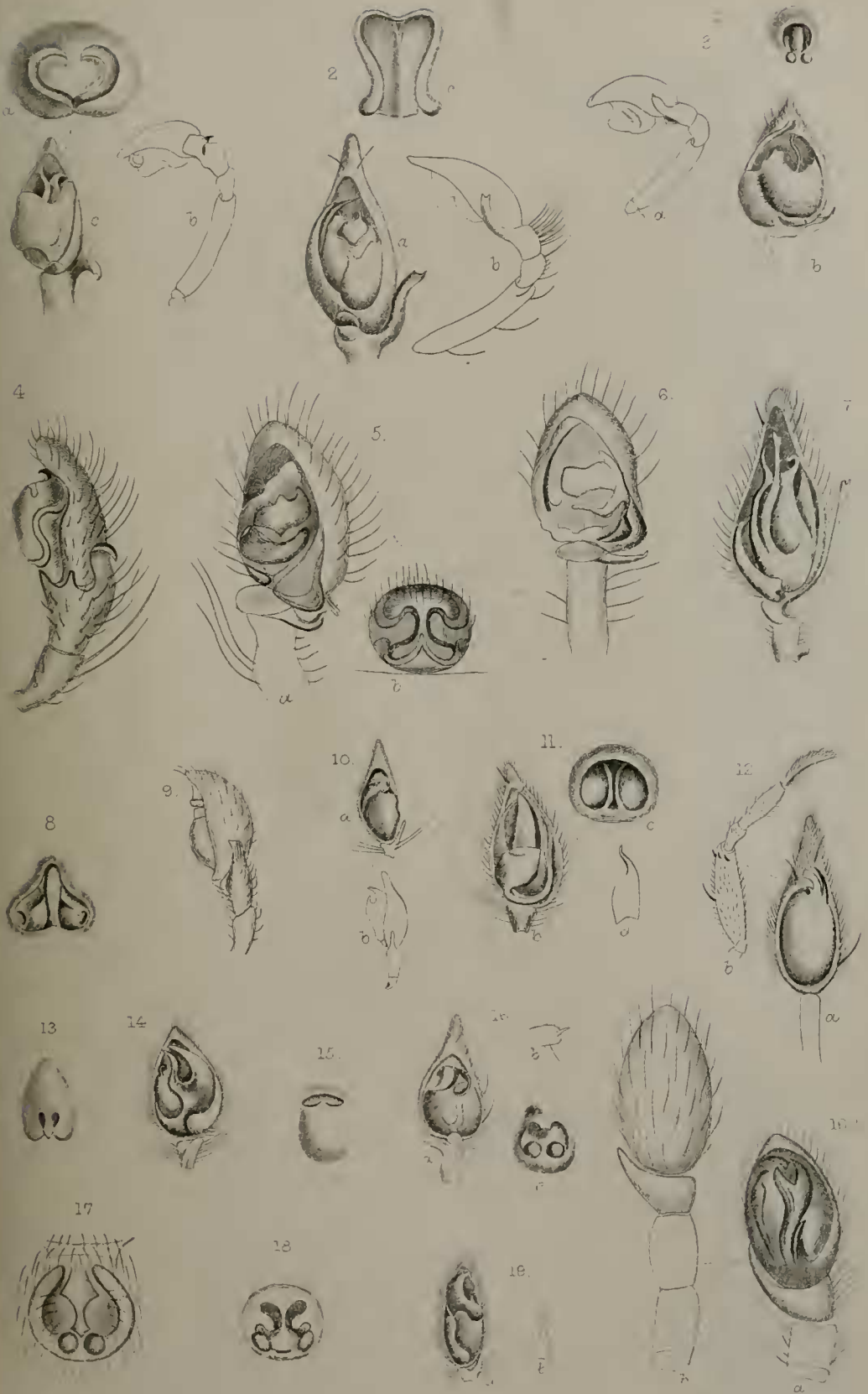
The following list and descriptions have been prepared from a collection of Araneidea made by myself during a two-months' ride through the Holy Land, between the 16th of March and the 18th of May 1865.

A continuous journey on horseback is not favourable for collecting objects of natural history; but riding through Palestine is not a very rapid affair, and it was therefore usually possible to keep up on foot with the general cavalcade, and so to collect insects and spiders &c. by the way during the greater part of the day. By these means, and by a rather more lengthened sojourn than eastern travellers are commonly in the habit of making on the Jordan Plains, my collection of insects in general amounted to about 700 species of all orders, and of Spiders (Araneidea) to about 300 species; of these last, however, some few were indeterminable from being in an immature state, 278 being determinable. Besides these, various species (not yet worked out) of other orders of Arachnida were captured, viz.:—Acaridea, Phalangidea, Solpugidea, and Scorpionidea. The general report of Palestine, either as an entomological or arachnological district, can scarcely be favourable; except in the more wooded localities, the country is too dry and barren, and it required far harder work to search for either insects or Spiders than is commonly necessary in most districts of Europe. I frequently worked for half an hour without during that time finding a single Spider; and the results of a day's work would often be no more than a dozen species, while numbers of the species found were represented by only single examples, or at most by one of each sex. About one half (136) of the species of Spiders found were met with on the plains of the Jordan, and, for the most part, within a circuit of about a mile from Elisha's Well (Ain es Sultan). A sojourn there of eight or nine days enabled me to work this district pretty closely; of the Spiders found there, 73 species were not found elsewhere, though probably many of them might be if other parts were equally well searched.

The following analysis of the collection will give some idea of the distribution of the 278 determined species among the different families and genera of Araneidea:—









	Number of species.			Number of species.	
	Known species.	New species.		Known species.	New species.
Fam. THERAPHOSIDES.			Fam. SCYTODIDES.		
Gen. Ischnocolus (<i>Acuss.</i>) ...	1		Gen. Scytodes (<i>Latr.</i>)	1	
„ Idiops (<i>Perty</i>)	...	1	„ Loxoscelis (<i>Hein. et Lowe</i>).....	1	
Fam. FILISTATIDES.			Fam. PHOLCIDES.		
Gen. Filistata (<i>Latr.</i>)	1	2	Gen. Pholcus (<i>Walck.</i>)	1	
„ Miltia (<i>Sim.</i>).....	1	1	Fam. THERIDIIDES.		
Fam. ŒCOBIIDES.			Gen. Ariamne (<i>Thor.</i>)=Ariadne (<i>Dol.</i>)	...	1
Gen. Œcobius (<i>Lucas</i>)	...	4	„ Argyrodes (<i>Sim.</i>)	1	1
„ Clotho (<i>Duf.</i>).....	1	1	„ Theridion (<i>Walck.</i>) ...	9	6
Fam. DYSDERIDES.			„ Ero (<i>Koch</i>).....	1	
Gen. Segestria (<i>Latr.</i>)	1		„ Ctenophora (<i>Bl.</i>)	1	
„ Ariadne (<i>Savign.</i>).....	1		„ Lathrodictus (<i>Walck.</i>)	3	1
„ Dysdera (<i>Latr.</i>)	...	1	„ Erigone (<i>Savigny</i>) ...	3	6
„ Oonops (<i>Templeton</i>)...	...	1	„ Linyphia (<i>Latr.</i>)	2	2
Fam. DRASSIDES.			„ Pachygnatha (<i>Sund.</i>)..	2	
Gen. Gnaphosa (<i>Latr.</i>)	...	8	Fam. EPEIRIDES.		
„ Drassus (<i>Walck.</i>)	4	11	Gen. Tetragnatha (<i>Latr.</i>) ...	...	3
„ Melanophora (<i>Koch</i>)...	3	9	„ Epeira (<i>Walck.</i>)	9	4
„ Micaria (<i>Westr.</i>)	...	5	„ Argiope (<i>Savign.</i>).....	1	1
„ Phrurolithus (<i>Koch</i>)...	...	1	Fam. ULOBORIDES.		
„ Cheiracanthium (<i>Koch</i>)	4	2	Gen. Uloborus (<i>Latr.</i>)	2	
„ Clubiona (<i>Latr.</i>)	1	3	Fam. THOMISIDES.		
„ Trachlas (<i>L. Koch</i>) ...	...	1	Gen. Thomisus (<i>Walck.</i>) ...	9	9
„ Hecaërge (<i>Bl.</i>)	...	2	Fam. PHILODROMIDES.		
„ Agroeca (<i>Westr.</i>)	...	1	Gen. Philodromus (<i>Walck.</i>)	2	3
Fam. PALPIMANIDES.			„ Sparassus (<i>Walck.</i>) ...	4	
Gen. Palpimanus (<i>Duf.</i>) ...	1		„ Heteropoda (<i>Latr.</i>) =		
Fam. DICTYNIDES.			„ Olios (<i>Walck.</i>)	...	1
Gen. Eresus (<i>Walck.</i>)	3		„ Selenops (<i>Duf.</i>).....	1	
„ Dictyna (<i>Sund.</i>)	2	3	Fam. SPIASIDES.		
Fam. AGELENIDES.			Gen. Pasithea (<i>Bl.</i>)	...	1
Gen. Amaurobius (<i>Koch</i>) ...	1	4	„ Oxyopes (<i>Latr.</i>)	2	2
„ Lachesis (<i>Savign.</i>).....	1	2	Fam. LYCOSIDES.		
„ Palestina (<i>Cambr.</i>), g.n.	...	3	Gen. Lycosa (<i>Latr.</i>)	10	5
„ Enyo (<i>Savign.</i>)	1	3	„ Ctenus (<i>Walck.</i>)	...	1
„ Cithæron (<i>Cambr.</i>), g.n.	...	1	„ Dolomedes (<i>Latr.</i>) ...	...	1
„ Agelena (<i>Walck.</i>)	1		Fam. SALTICIDES.		
„ Tetrax (<i>Sund.</i>)	...	2	Gen. Salticus (<i>Latr.</i>).....	33	29
„ Tegenaria (<i>Latr.</i>)	1	1	Totals ...		
Fam. HERSILIIDES.				127	151
Gen. Hersiliada (<i>Sim.</i>)	..	1			

From the above analysis it will be seen that 19 families, comprising 59 genera, are represented. The distribution of genera into families has been made somewhat tentatively; unsatisfied with existing systematic arrangements, I have given the above from a scheme drawn up in MS. several years since, but of which, as a whole, opportunity has not yet offered for the publication. The Spiders of the family *Salticidae* have been for the present included under one genus (*Salticus*, Latr.); but in the details and descriptions a notification will be appended of the generic divisions adopted by M. Simon, but which are some of them, as it seems to me, scarcely tenable as distinct genera. The families most numerously represented are the *Drassidae* (55 species) and *Salticidae* (62 species), the two together monopolizing 117 species, or nearly half of the whole number met with. Both these groups consist of Spiders peculiarly fitted for an arid, sterile, stony land—the *Drassidae* being found almost exclusively beneath stones and pieces of detached rock, while the *Salticidae* in general delight to jump about and disport in bright sunshine on the most barren and stony places, or among the stunted shrubs and flowers with which such spots are sometimes scantily clothed. Of the whole number of determinable Spiders discovered (278 species), 151 species appear to have been hitherto undescribed, some few others having been described from European examples, by other arachnologists, since the collection was formed; forty-three out of the fifty-five species of *Drassidae*, and twenty-nine of the sixty-two species of *Salticidae*, appear to be undescribed. This great richness in undescribed species is easily accounted for by the fact that (as I believe) scarcely any Spiders have ever before been collected in those regions of the world. The general character of the Araneidea of Palestine and Syria is strictly European; few, even of those found on the plains of the Jordan, give any idea of a transition to a tropical fauna; all the known genera and most of the more special groups have European representatives; and the Spiders of the two new genera characterized present nothing in form or structure which would make them unlikely to be met with in suitable localities in the south and south-eastern parts of Europe. Many species of the Spiders in the present collection were met with in Egypt in 1864, especially of the family *Drassidae*; the Egyptian collection, however, remains yet to be thoroughly worked out and collated with that made in Syria and Palestine. It may perhaps be interesting to some readers to state that the route followed was from Jaffa by Ramleh, El Birriyeh, and Kurict-el-Nab to Jerusalem, thence to Jericho and the plains of the Jordan, from Jericho by Marsaba and the pools of Solomon to Hebron, returning thence by Bethlehem to Jerusalem, and then *viâ* Bethel, Nablous, Samaria, Jenin, the plains of Esdraelon, Jezreel, and Nain to Nazareth; from Nazareth the route lay across the Kishon to Mount Carmel and Haifa, thence to Kefr Menda and Cana-el-Jelil (Cana of Galilee), from Cana to Tiberias and the Sea of Galilee, thence by Tel Hûm and Safed to Kedes, Hûnin, and Baniyas, from Baniyas by Hasbeiya and Rasheiya over the skirts of Mount Hermon to Damascus, from

Damascus by the river Abana, Abila, Suk Wady Barada, and Surghaya to Baalbec and the Lebanon, and so to Beirût. I regretted much not being able to work the Lebanon district more thoroughly than the mere ride through some portion of it enabled me to do: just at the time of my visit to that part (middle of May) insect life was becoming abundant, and I do not doubt that among the Araneidea the number of species in the families *Theridiides* and *Epeirides* (some groups of both which families are but scantily represented in my collection) might have been greatly added to; the time and money, however, allotted to my eastern trip had come to an end; and I took leave of those most interesting regions with the greater regret, inasmuch as only the day previous to my departure I found several of the most curious and least-European-looking of the Spiders in the collection, viz. *Thomisus setiger* (p. 307), *Ariamne longicauda* (p. 277), *Argyrodes syriaca* (p. 279), *Idiops syriacus* (p. 216), and *Ctenophora monticola*, Bl. (p. 287).

Before concluding this short introductory notice I must express my thanks to Dr. L. Koch, of Nürnberg, and Mons. Eugène Simon, of Paris, who have given me their valuable assistance in working out the two large families before mentioned (*Drassides*, Dr. Koch; *Salbicides*, M. Simon). I had hoped long ere this to have seen the new species of *Drassides* described and figured by Dr. Koch in his invaluable work 'Die Arachnidenfamilie der Drassiden.' This work is still in an unfinished state, and its continuation indefinitely postponed. The names of nearly all the new species of *Drassides* are those conferred upon them by Dr. Koch, and communicated to me in his letters on the subject; these names I have, with Dr. Koch's kind consent, retained in the descriptions given below. As alluded to before, the systematic arrangement adopted in the following pages is taken from an unpublished scheme drawn up by myself several years ago, but partially adopted in the arachnological portion of the 'Zoological Record,' vol. vii. 1870, pp. 207-224.

N.B.—Since writing the above Dr. L. Koch has most generously placed at my disposal for this paper all the beautifully executed dissectional sketches he had executed of the Palestine and Syrian *Drassides* from the examples described below.

Order ARANEIDEA.

Fam. THERAPHOSIDES.

Without doubt the Syrian and Palestine species of this family would be greatly increased by any arachnologist with leisure to work special districts closely; but a scrambling ride gives very little chance of meeting with them.

Genus ISCHNOCOLUS (Ausserer).

ISCHNOCOLUS SYRIACUS, Aeuss. Beiträge zur Kenntniss der Arachnidenfamilie der Territelariæ, Verh. z.-b. Gesellsch. Wien, 1871, Bd. xxi. p. 189.

Adult males and females at Jerusalem.

Genus IDIOPS

(Perty, Del. An. Art. Bras. p. 197).

IDIOPS SYRIACUS, Cambr. P. Z. S. 1870, p. 107, pl. viii. fig. 3.

Two females, one adult, the other immature, were found in cylindrical holes in a bank near Beirût; the holes were lined with silk, and their upper ends closed with a hinged lid similar to those of *Nemesia cœmentaria* (Latr.).

Fam. FILISTATIDES.

Genus FILISTATA (Latr.).

FILISTATA ATTALICA, Koch, Die Arachn. v. p. 6, pl. 146. fig. 343.

Adult females in holes and crevices of trees and buildings at Hebron and Damasens.

FILISTATA ALBIMACULATA, sp. nov. (Plate XIII. fig. 1.)

Male adult, length $1\frac{1}{2}$ to 2 lines.

The *cephalothorax* is of an oblong-oval form, flattened above, and very slightly constricted laterally at its fore extremity; it is of a yellow-brown colour, slightly tinged with red, and narrowly margined with black-brown, the ocular region being suffused with black; the normal furrows and indentations are indicated by blackish-brown lines; and the whole is thinly clothed with coarse white and mostly adpressed hairs.

Eyes eight in number, considerably unequal in size, and grouped closely together on a slight oval eminence; they form two groups, an outer and an inner one: the outer one is of four large eyes (two on either side nearly contiguous to each other, the foremost of each pair being the largest), forming a transverse oval; the inner group, also of four eyes, is much smaller, and forms a trapezoid whose foremost side is shorter than the hinder one; the two foremost of these eyes are smaller than the others, in fact the smallest of the eight. *Clypeus* prominent.

Falces small, prominent; fang small.

Legs rather long, strong; relative length 1, 2, 4, 3; they are of a yellow-brown colour, slightly tinged with red; the femora and tibiæ of the first and second pairs, and the femora of third and fourth, are strongly suffused with black-brown; the femora and tibiæ of the first pair are much stronger and longer than those of the other legs. There are a few spines beneath the tibiæ of the first pair; and all the legs are clothed with coarsish hairs, those on the genual and metatarsal joints of the first pair being very conspicuously white. There were, as far as I could ascertain, two terminal tarsal claws.

Palpi moderately long and strong; they spring at a considerable distance from the base of the maxillæ, and are similar to the legs in colour; the radial joint is long, strong, and tumid; the digital short, small, and difficult to distinguish separately from the base of the

palpal organs, which consist of a single basal bulb prolonged into a longish beak tapering to a fine sharp point which is slightly bent.

Maxillæ long and strong, greatly curved over the labium, which they completely encircle. *Labium* rather long, narrowest just below the middle, and blunt-pointed at the apex.

Abdomen larger than the cephalothorax, oval, and convex above; it is of a velvety-black colour, with two very conspicuous white markings in the central longitudinal line of the upperside; the foremost of these markings is the largest, and is of an oval form, pointed before, and broad and rounded behind; the hinder one is of a somewhat rounder form, and is situated just above the anus. These markings are formed by white hairs.

The female differs considerably from the male in the colour and markings of the abdomen, which is of a browner hue and furnished thickly with yellowish-grey and whitish hairs, some of which latter colour are disposed in spots and lines forming a somewhat regular pattern, a portion of which consists of some transverse angular bars, or chevrons, on the hinder part.

This very distinct and conspicuous, though small, species was not rare beneath stones on the plains of the Jordan near ancient Jericho. The males were active when disturbed, but the females quite sluggish. I did not observe any webs or snares; but these may have been destroyed in the lifting up of the stones. It is very nearly allied to a Spanish species (*Filistata nana*, Sim.) lately described by M. Eugène Simon (Rev. et Mag. Zool. 1868); but though resembling it in general form and size, it differs in the pattern on the abdomen (which in *F. nana* is similar in both sexes), and also in the palpal organs of the male, the bulb being smaller, the prolongation from it tapering more gradually, and the whole longer than in the species above described. The habitat also appears to differ; according to M. Simon *F. nana* is found in the fissures and crevices of rocks.

FILISTATA HIRSUTA, sp. nov.

Female immature, length $1\frac{3}{4}$ lines.

This species, of which but a single example was met with, is allied to *F. attulica* (Koch); it may, however, be at once distinguished by its rougher appearance, and the greater proportional length of its legs, especially of those of the first pair.

The *cephalothorax* is yellow, narrowly margined with black, and with a longitudinal central band of dusky black running from the margin of the clypeus, including the eyes, back to the hinder margin, where it tapers to a point; the sides are also marked with converging brownish-black lines; and the whole is clothed with coarsish adpressed hairs of a yellowish-grey colour. The *eyes* appeared to be normal in their relative size and position. The *legs* are yellowish, somewhat obscurely suffused with brown, and furnished with rather coarse brownish-yellow hairs, those on the femora being numerous, curved, and spinous in their character; they have none of the black maculæ which I have observed in all the examples of *F. attulica* that have come under my notice; their relative length

is 1, 4, 2, 3. The *palpi* are long, strong, similar to the legs in colour, and furnished with coarse hairs.

The *abdomen* is of a short oval form, tolerably convex above; the hinder extremity projects over the spinners, and the fore extremity over the base of the cephalothorax; it is of a dull sandy yellow-brown colour, thickly clothed in front and on the sides with short coarse yellowish hairs, leaving a bare space along the middle and over the hinder extremity of a pointed form, the point directed forwards: possibly this bare portion may have been caused by denudation; but from the regularity of its form I should rather judge it to be a specific character.

The single example found was under a stone on the skirts of the Lebanon.

Genus *MILTIA* (Simon) = *Enyo* (Luc. ad partem).

MILTIA AMARANTHINA, Luc. Explor. en Algérie, Arachn. p. 232, pl. 14. fig. 7.

The male of this Spider having never yet been described, the following notes upon it will not be out of place. It is rather smaller than the female, which it resembles in general form and colour: the *palpi* are moderate in length and strength; the radial and cubital joints are short, the latter being the shortest and rather produced in a somewhat quadrate form at its fore extremity on the upperside; the outer corner of the produced part has a small pale coloured apophysis; the digital joint is large and of an oval form; the papal organs are highly developed and very prominent, not very complex, consisting chiefly of a large somewhat rounded white corneous lobe encircled, just beneath the margins of the digital joint, with a strong spiny-looking deep-red-brown fillet.

M. Lucas (Explor. en Algérie, Arachn. p. 232) includes *M. amarantina* in the genus *Enyo*, recognizing at the same time its utter want of structural affinity with *Enyo*, except in the position of the eyes. Walckenaer subsequently formed the family "Incertaines" for it within his genus *Clotho*, in which he also included *Enyo* merely from the similarity of the position of the eyes. Dr. Thorell (Europ. Spid. p. 108) expressed his opinion that it ought to be made the type of a separate genus; and just previously to the publication of that opinion M. Simon (Rev. de Zool. 1869) formed for it the genus *Miltia*, still, however, retaining it alongside of *Enyo* in his family *Enydes*, concluding his remarks in the following words:—"Par la position et nature de ses yeux, ainsi que par l'ensemble de ses formes, ce nouveau genre ne peut être éloigné des *Enyos*; cependant les pièces de la bouche sont tout-à-fait différentes, et forment une curieuse exception dans la famille des *Enydes*." No two Spiders, however, as it seems to me, could be more different in the "ensemble de ses formes" than *M. amarantina* and the typical *Enyo*—the latter being of a short, very convex form, with long slender legs, the former elongate, flattened, and short-legged; this, joined to the totally different form of the maxillæ and labium, appears to neces-

sitate its complete removal from *Enyo*: it is probably with *Filistata* (Latr.) that its family affinities are to be found, and, in accordance with this opinion, I have here placed it in the family *Filistatides*.

MILTIA DIVERSA, sp. nov.

Male adult. This species resembles *M. amaranthina* in size, form, and colour; but it differs remarkably in the structure of the palpal organs; the digital joints of the palpi are smaller, while the form of the radial joint differs but little. The palpal organs are far less prominent and not so highly developed; they are entirely destitute of the strong, nearly black, corneous fillet, which in *M. amaranthina* surrounds their whole outer margin just beneath the margin of the digital joint. The eyes also, though similar in position, are far less visible, it being difficult to see them accurately. A single example was found under a stone at Hasbeiya.

Fam. *ŒCOBIIDES*.

Genus *ŒCOBIUS* (Luc.).

ŒCOBIUS TRIMACULATUS, sp. nov. (Plate XIII. fig. 7.)

Male adult, length 1 line, female adult $1\frac{1}{2}$ line.

In general structure and characters this species is very similar to *Œ. domesticus* (Luc.) and *Œ. annulipes* (id.), as also to *Œ. maculatus* (Sim.); but it differs from all three in the relative position of the eyes, and notably from the first two in colour and markings.

The male has the *cephalothorax* of the deepest black-brown colour: the *eyes* are not very unequal in size; they are placed in a compact group on an elevation of the caput, which rises gradually from the surrounding surface, but leaves a considerable and prominent clypeus, the margin of which is pointed in the centre; they are eight in number (that is if two flat, irregularly formed, shining white spaces, looking like rudimentary or atrophied eyes*, are really eyes or their representatives), and may be described as in two transverse curved rows of four each; the two lateral eyes on each side of the front row are near together, the inner ones being the largest of the eight; close behind each of these pairs is the lateral eye, on either side of the hinder row, forming with the pair in front of it a triangle in which all the eyes are about equally distant from each other. Each of the two eyes forming the central pair of the hinder row is depressed, of a bent oblong form, placed obliquely to and distinctly separated from the lateral on its side.

* These two eyes (the two middle ones of the hinder row) have not been considered to be eyes by either M. Lucas, who founded the genus, or Mr. Blackwall, who has since described a new species of it. M. Simon, however, as well as Dr. Thorell, consider them to be true eyes. Not having had an opportunity of examining them under a lens of high power, I cannot speak positively on the point; but my impression is that they are undeveloped eyes, or perhaps the sites where perfect eyes once existed, but which have now become, from some train of causes, devoid of ocular structure properly so called. Imperfectly developed eyes exist also in some other species of Spiders.

The *abdomen* is of a glossy jet-black colour, marked on the upper-side with three large brilliantly white spots; one on each fore corner or shoulder of the abdomen; these are of a subtriangular form, with the most pointed angles of each directed towards one another; the third spot is of a somewhat diamond-shape, with its fore angle truncated, and is seated just above the anus. The *legs* are pale yellow, the tibiæ being broadly annulated with deep brown-black; the metatarsi are almost wholly suffused with the same colour, while the tarsi are of paler duller hue. When in a state of rest the legs of this and other species are spread out in a radiated form; they do not differ much in length; those of the third pair appear to be the shortest, and those of the first pair slightly the longest. Lucas gives the relative length of the legs of those species known to him as 1, 4, 3, 2; but, from the difficulty of accurate measurement, I have not been able to verify this in regard to the present species. The *palpi* are black, and have the digital joints and palpal bulb of large size; the radial is shorter than the cubital joint; neither of them presents any thing remarkable in its form; the palpal organs are highly developed and prominent, consisting of several projecting corneous processes, of which the two largest and longest are directed backwards. The spinners are eight in number, two very short, small, and supernumerary being situated in front of the six ordinary ones; of these the superior pair are the largest and longest, and are two-jointed, curving upwards over the extremity of the abdomen; between them is the anus, which is large and seated on an oval prominence fringed with divergent or somewhat radiating strongish pale hairs, which appeared to be of a papilliform nature.

In the *female* the cephalothorax is of a more oval form, as well as less black and glossy; the abdomen also differs in having seven or eight smaller white spots on the upperside in addition to the three large ones, between which the smaller ones are regularly grouped; four of them form a transverse curved row nearly across the middle of the abdomen; behind these are two more, and between them and the hinder one of the large spots is another largish one, or two small and confluent, forming with the rest a sector of a circle. Some slight variation exists in different examples in this position of the spots; and the two large ones near the fore margin are sometimes nearer together than the two corresponding spots on the abdomen of the male. The *legs* of the female are all pale yellow, annulated with black-brown; the metatarsi of the fourth pair are furnished with calamistra, but the male has no trace of them.

Although nearly allied to *Æ. maculatus* (Sim. Mém. Liège, 1870), of which the female only has been recorded, I think the present is a distinct species; it is not rare on the plains of the Jordan, where alone it was met with. The males were usually very conspicuously displayed with extended legs on the surface of stones and broken pieces of rock; they were very agile when disturbed. The females were generally concealed beneath thin sheets of web spun over depressions on the faces of the stones, leaving a sort of tubular-shaped place of exit, through which, when disturbed, they rapidly endea-

voured to escape. M. Simon is of opinion that *Æcobius* should be placed in the same family as *Hersilia*, and removed from close proximity to *Clotho*; the relationship, however, between the two former appears to me more than doubtful, while between *Clotho* and *Æcobius* there is not only a most marked resemblance in general form, but both have a very peculiar and special point of detail in structure (the fringed anus); other points also of structure are so similar that it is not easy at first to distinguish them even generically.

ÆCOBIUS TELIGER, sp. nov. (Plate XIII. fig. 8.)

Similar in size, general form, and structure to *Æ. trimaculatus*, this species may be at once distinguished by its colour, and the markings on the abdomen. The *cephalothorax* is of a deep blackish-brown hue, the legs and palpi are pale yellow, thinly annulated with black-brown. The *abdomen* is of a dull cream-white colour above, the white produced by cretaceous-looking spots intersected irregularly with dusky lines; on its centre is a longish black marking bearing a rough resemblance to a double arrow-head, or of a diamond-shape, in front, followed behind by, and connected with, a cruciform patch; on the outer sides of this marking are some black spots always near to, and sometimes connected with and forming part of it; the sides are black, which colour encroaches in parts on the white of the upperside, and forms behind, just above the spinners, a largish triangular white patch, connected by a neck or shaft with the rest of the white ground of the upperside; the longest point of this triangular patch is directed backwards; thus it has the form of a spear or barbed arrow-head, and well marked in all the examples of both sexes that I have seen: the underside is of a dull whitey-brown colour.

The *palpi* of the male are strong; the digital joints large, but not so large as in *Æ. trimaculatus*; the palpal organs are prominent and highly developed, having some strong corneous projections, but differing in their structure from those of that species. The *eyes* are grouped in the same general form as those of the species just mentioned, but they occupy a proportionally wider space, and form two rather compact groups of four each; the irregular flattened intermediate pair of the hinder row are large and of an oblong form, and each of them is placed obliquely rather inside and behind, though contiguous to, the lateral of the same row on its side.

The *cephalothorax* of the female is rounder than that of the male, but in colour and markings it resembles that sex.

Adults of both sexes were found on stones and rocks at Beirût, Tiberias, Jerusalem, and Hebron.

ÆCOBIUS AFFINIS, sp. nov.

This spider is very nearly allied to *Æ. teliger*, but differs in having a paler cephalothorax, which is yellowish with a dusky brownish hue in the region of the eyes and in a line with that backwards, as also on the margins and in the directions of the normal indentations; the abdomen is also less distinctly marked, and, though the general character of the markings is similar, the white ground-colour prepon-

derates ; the legs are yellowish, thickly annulated with black-brown ; the palpi of the male have a small transversely oblong black spot on the upperside of the radial joints, and the palpal organs are much simpler in structure than in *Æ. teliger*, though well developed and prominent ; the position of the eyes appeared to be nearly the same.

Adults and immature examples of both sexes were found on stones and rocks at Hasbeiya, and also at the foot of the Lebanon range near Ain Ata ; immature examples of, I believe, this species were also found at Jerusalem. It is nearly allied to a Madeiran species, *Æcobius navus* (Bl.), of which only the female has been described, and which appears to be more closely and thickly mottled and marked with black and white on the abdomen, and more distinctly annulated on the legs.

ÆCOBIUS ALBIPUNCTATUS, sp. nov.

The female is similar to *Æ. trimaculatus* (♀) in size and form ; but the cephalothorax is rounder. The *abdomen* is of a uniform black, marked above with a few minute white spots symmetrically arranged, though rather differently in the two examples found. Close above the spinners is a larger white spot of a somewhat diamond-shape ; the *legs* and *palpi* are yellow, broadly and very distinctly and regularly annulated or, rather, banded with black.

Although nearly allied to *Æ. trimaculatus*, it is certainly a distinct species ; the fringe of bristly hairs surrounding the anus is of a well-marked character.

Two adult examples on a rock near Damascus.

Genus *CLOTHO* (Dufour).

CLOTHO LIMBATA, Koch, Die Arachn. x. p. 89, pl. 350. fig. 816.

An immature female of this fine species was found under a piece of detached rock near Jerusalem.

CLOTHO SEPTEMPUNCTATA, sp. nov.

Male (not quite adult), 4 lines long.

This species is similar to *C. limbata* in form and structure. The whole of the fore part of the Spider is yellow, but of a clearer, brighter hue than in that species ; the abdomen is dull black, but the upperside, instead of being surrounded by a continuous border of a whitish-yellow colour, has in its place a marginal row of seven large yellow spots ; four of these form nearly a square on its fore half, and the three others are in a triangle above the spinners, the apex directed backwards. It is possible that in some examples these spots may become nearly confluent, and so form a band very similar to that on the abdomen of *C. limbata* ; but still some other specific characters, such as a slight difference in the relative position of the eyes, and the less dense armature of the legs with hairs, bristles, and fine spines, seem to show that it is quite distinct from that species, of which six adult examples found in 1864 at Alexandria (Egypt)

presented no variation whatever in the uniformity and continuity of the abdominal border.

An immature male was found at Jerusalem under a piece of detached rock in the valley of Hinnom, an immature female in a similar situation near Ain Ata, and another at Tiberias.

Fam. DYSDERIDES.

Genus SEGESTRIA (Latr.).

SEGESTRIA PERFIDA, Walck. Ins. Apt. i. p. 267.

An adult male at Jerusalem.

Genus ARIADNE (Savigny).

ARIADNE INSIDIATRIX, Savigny, Arachn. d'Egypte, pl. 1. fig. 3.

Immature females of this Spider were found in crevices of a bank near Beirût.

Genus DYSDERA (Latr.).

DYSDERA WESTRINGII, sp. nov. (Plate XIII. fig. 2.)

Male adult, length $4\frac{1}{2}$ lines; female adult, 6 lines.

In general form, colour, and appearance this species is very similar to *D. erythrina* (Walck.) and *D. rubicunda* (Koch), but from both it may be distinguished by the form of the palpal organs, as well as by the surface of the cephalothorax and the sternum, which are closely freckled with impressed dots or punctures. The two foremost eyes are the largest of the six; the falcies are shorter and less powerful than in the above-mentioned species; and the palpal organs are more attenuate, much constricted near the middle, and are furnished at their extremity with a slender, curved, prominent, black spine. The *abdomen* is similar in colour to that of *D. erythrina*, but (in spirit of wine) has a mottled or reticulate appearance.

It is not uncommon throughout Palestine and Syria, and I met with both sexes adult under stones in various places from Hebron to Damascus. It is with great pleasure that I connect with this Spider the name of M. Nicolas Westring, who has laboured long and successfully in the working out of Swedish Spiders.

Genus OONOPS (Templeton).

OONOPS PUNCTATUS, sp. nov. (Plate XIV. fig. 3A.)

Male adult, length $\frac{4}{5}$ of a line.

The whole of this Spider is of a pale, but brightish, yellow-brown colour, the legs being rather lighter than the rest.

The *cephalothorax* is oval, pointed, but not constricted laterally before; it is glossy and very sparingly furnished with inconspicuous hairs.

The *eyes* (six in number) are large; four, almost contiguous to

each other, form a nearly straight transverse line, and, obliquely placed, in front of the lateral on either side is another; the two centrals of the hinder row are round; the rest appeared to be slightly oval in shape. The *legs* are moderately long and strong, especially the femoral joints.

The *palpi* have the humeral joints inordinately large and tumid, the cubital joints are very small, the radials larger; the digital joints are small, and the palpal organs simple, not very unlike those of *Dysdera erythrina* (Walck.), they have a reddish prominence near their extremity. The *sternum* is somewhat heart-shaped, with a strong reddish indentation opposite the insertion of each leg; the *maxillæ* are short, strong, considerably inclined towards the labium, and narrower at the extremities than at the bases; the *labium* is small and short, but broad in proportion, and of a somewhat sub-triangular form.

The *abdomen* is oval, and not very convex above; it is encased in an upper and under coriaceous kind of integument; this is united in front, but separated along the sides and behind, where it gapes open a little, the spinners protruding through the cleft: both the upper and the under sides are sparingly furnished with hairs, and thickly dotted with minute punctures; the spiracular openings are (as far as I could ascertain, though I am not certain upon the point) four in number.

An adult male of this minute but most remarkable and distinct Spider was found under a stone on a wall close to Hasbeiya.

Fam. DRASSIDES.

Genus GNAPHOSA (Latr.) = *Pythonissa* (Koch).

GNAPHOSA RIPARIENSIS, sp. nov. (Plate XV. fig. 1.)

Male adult, length $2\frac{1}{2}$ to 3 lines; female adult, 4 lines.

This species is very similar to *G. exornata* (Koch), both in size and markings; but it may be easily distinguished by the structure of the palpi and palpal organs.

The *cephalothorax*, which is of ordinary form, but rather flattened above, is of a yellow-brown colour, marked rather irregularly on the sides with blackish brown (indicating, however, the ordinary grooves and converging indentations); and the whole is clothed with a greyish pubescence.

The *eyes* are placed in two transverse curved rows of four each, the curves directed towards each other, and forming a short transverse oblong figure, wider at the ends than in the middle; each of the hind central eyes is nearer to the lateral of the same row, on its side, than they are to each other; the fore centrals are larger than the fore laterals, and the interval between them is greater than that between each and the lateral on its side.

The *legs* are tolerably strong, rather long; relative length 4, 1, 2, 3; they are of a yellow-brown colour, thinly furnished with hairs and fine spines, and, in some parts, with a short grey pubescence;

each tarsus terminates with two curved pectinated claws, beneath which is a small claw-tuft.

The *palpi* are short and rather strong; the *radial* is rather shorter than the cubital joint, and has its outer extremity produced into a strong, broad, red-brown apophysis, from the upperside of which springs an almost perpendicular conical projection with a small, rather sudden, sharp, curved, corneous point at its extremity; the palpal organs are well developed, prominent, but not very complex, with a strongish curved corneous process at their extremity.

The *falces* are rather long, strong, and conical; and a little prominent near their base in front. The *maxillæ* are strong, considerably curved, and inclined strongly over the labium, and are also broadly impressed in a transverse direction.

The *labium* is oblong, broader at the base than at the apex, which is rather squarely truncated; these parts are of a dark reddish-brown colour, the *maxillæ* being dull yellowish white at their extremities. The *sternum* is large, heart-shaped, and of a yellow-brown colour, the centre being strongly suffused with blackish.

The *abdomen* is of an oblong-oval form, and of a dull brownish-yellow colour, clothed with short fine grey and yellowish hairs; in the central line of the fore part of the upperside there is a strong oblong black-brownish patch, followed behind by a close series of strongish angulated blackish bars or chevrons, which have a tendency to become confluent, but do not extend to the spinners, round which are two or three blackish spots; the sides are marked irregularly with blackish brown, and the underside has two parallel longitudinal black-brown lines throughout the greater part of its length: the spinners are rather long and prominent; those of the inferior pair are the strongest and generally longest, and of a dark blackish-brown colour, the rest being of a dull whitish yellow.

The *female* resembles the male, but is larger; the genital opening is simple, being of a transverse somewhat oval form margined with red-brown, and has a somewhat triangular space within it; the palpi of the female end with a curved black pectinated claw.

Adults of both sexes were found beneath stones on the plains of the Jordan, near Jericho.

GNAPHOSA PLUMALIS, sp. nov. (Plate XV. fig. 3.)

Male adult, length 3 lines.

In form and general structure, as well as in the position of the eyes, this species nearly resembles *G. ripariensis*, but it may be distinguished at once by its generally lighter colour and yellower ground, as well as by the structure of the palpi and palpal organs. The whole of the fore part, including the legs and palpi, is of a yellowish colour; the cephalothorax has a narrow black marginal line; and some small blackish markings indicate the junction of the caput, thorax, and thoracic segments; and the whole is clothed with a short grey pubescence. The *legs* are moderately long and strong; their relative length is 4, 1, 2, 3, and they are furnished with hairs

PROC. ZOOL. SOC.—1872, No. XV.

and spines, the latter chiefly on those of the two hinder pairs; each tarsus ends with two curved pectinated claws, beneath which is a small claw-tuft.

The *palpi* are short; the radial is rather shorter than the cubital joint, and has a small, tapering, pointed, red-brown apophysis at its outer extremity; this apophysis is rather prominent outwardly, and has its extreme point a little bent, or crooked, upwards; the digital joint is short, oval in form, pointed at its fore extremity; the palpal organs are prominent, not very complex, and with one or two small corneous spines at their extremity. The *abdomen* is pale yellow, clothed with a grey pubescence; the fore half has a longitudinal central yellow-brown bar, on either side of which towards its hinder part is a diffused blackish spot or marking, followed by another of a similar kind; to these, on either side, succeed, in a longitudinal line, three or four other similar but smaller markings, being the indications of the ordinary transverse angular bars or chevrons, broken off at their angles, showing, however, several broad, strong, angular, pale yellow bars, owing to the ground-colour of the abdomen being lighter within the black markings than on the outside; which last is also more or less sprinkled with small brownish points, these being less visible along the central line. The sides are marked with four irregular blackish lines or stripes; that nearest to the fore extremity is horizontal, the others oblique and with a tendency to join with the other black markings above mentioned.

An adult male was found under a stone at Jerusalem, and an immature female in a similar situation at Jericho. I also found an adult male at Alexandria (Egypt) in 1864, and have received it from Spain.

GNAPHOSA EXCERPTA, sp. nov. (Plate XV. fig. 4.)

Male adult, length 3 lines.

This species is of ordinary form and general structure, and is very similar in size, general colour, and markings to *G. exornata* (Koch), as also to the two foregoing species; but it may be distinguished from all by the structure of the palpi and palpal organs, as well as by other specific characters.

The *cephalothorax* has the sides much depressed near its margins; it is yellow-brown marked with strong blackish-brown converging lines following the directions of the normal grooves and indentations; its margins are black, and the surface (especially of the caput) is pretty densely clothed with mixed yellowish and greyish pubescence, the colour of that which clothes a broad marginal band being whitish grey. The *eyes* are normal in their position, except that the hinder row appears to be rather straighter than in some other species; those of the hind central pair are (each of them) almost contiguous to the hind lateral on its side. The *legs* are rather long, their relative length 4, 1, 2, 3, moderately strong, furnished with hairs, fine bristles, and (on those of the fourth pair) with a few fine spines; they are of a dull yellowish-brown hue.

The *palpi* are short, and similar to the legs in colour: the radial and cubital joints are of equal length; the former has a kind of group of long strong bristles on its inner side, and a not very long, but strong, apophysis from its extremity towards the outer side; this apophysis curves a little upwards; and its extremity, which, looked at from one point of view, is broad and obtuse, is from another point sharply hooked backwards; the palpal organs are neither very prominent nor complex. The *falces*, *maxillæ*, *labium*, and *sternum*, which have, neither of them, any thing particularly noticeable in their structure, are of a dark yellow-brown colour.

The *abdomen* is of an oblong-oval form, very slightly broadest at its hinder extremity; it projects considerably over the base of the cephalothorax, and is of a dull yellow-brown colour, clothed with mixed greyish, yellowish, and blackish hairs and pubescence, with indistinct traces of a pattern similar to that in the species above alluded to: there are also numerous closely grouped black recurved bristles beneath the fore extremity of the abdomen: the spinners of the inferior pair are long, strong, and curved; this curvature may be accidental, but I am inclined to think it is not so; and if not, it is a good distinctive specific character; the superior spinners are small, and only half the length of those of the inferior pair.

A single example of this species (which was overlooked when the *Drassides* of the present collection were submitted to Dr. L. Koch) was found under a stone at Nazareth.

GNAPHOSA CAMBRIDGII, sp. nov. (Plate XIII. fig. 3, and Plate XV. fig. 2.)

Male adult, length 4 lines; female adult, 6 lines.

The cephalothorax, legs, *falces*, *labium*, and *sternum* are of a general dull reddish sandy-yellow colour, that of the abdomen being pale brownish straw-yellow. The cephalothorax is oval, very slightly compressed on the sides forwards, and margined with black-brown; the normal grooves and furrows are distinctly marked with dark blackish brown, especially those denoting the junctional line of the caput and thorax.

The *eyes* are in two transverse rows; the upper (or hinder) row nearly straight, the lower or front one considerably curved, so that the eyes of each lateral pair (as in the species of this genus in general) are widely separate; these latter are the largest, the four central eyes being smaller; the two centrals of the hinder row are rather further from each other than each is from the lateral eye on its side; the eyes of the front row are very nearly equidistant from the other. The *legs* are long, moderately strong, and well furnished with hairs, bristles, and spines; these last are most regular and numerous, though not the largest, on the tarsi; each tarsus ends with two curved, black, pectinated claws.

The *palpi* are moderately long and strong, furnished with hairs and strong bristles; the radial is rather longer than the cubital joint but not so strong; it has at its extremity on the outer side a

strong, deep-red-brown, obtusely pointed apophysis, which curves upwards and slightly over the base of the digital joint; there is also a minute red-brown tubercular prominence, near which is a long, strong, black bristle, at the extremity, on the upperside of the cubital joint; and close in front of it is another at the base, on the upperside, of the radial joint; the digital joint is large, but of ordinary form, and its length is equal to that of the radial and cubital joints together; the palpal organs are well developed, but not complex. The *falces* are moderate in length and strength, straight and conical, but prominent near their base in front. The maxillæ, labium, and sternum present no deviation from the ordinary generic type.

The *abdomen* is long-oval in form, furnished, but not thickly, with hairs, and with some strongish black recurving bristles at its fore extremity; the upperside has 4-6 conspicuous (in some examples) yellow-brown, slightly impressed spots, forming an oblong figure, but these are not very visible in other examples; it is pretty thickly spotted on the upperside with black-brown spots of various sizes, but forming a somewhat regular pattern, consisting of longitudinal and transverse lines, the former converging, the latter running off obliquely on the sides towards the spinners; these are six in number, long, slender, and very prominent; those of the inferior pair are the strongest, they are of a brightish yellow-brown colour, and nearly, if not quite, half the length of the abdomen in some examples; the rest are shorter and slenderer, but of unequal length; the spinning-tubes at the extremity of those of the inferior pair are very conspicuous; the underside of the abdomen has only the faint indications of two longitudinal slightly curved lines of dusky dots, commencing near the spiracular plates.

The *female* differs only in her shorter legs; the genital aperture is of an elongate-oblong form, constricted transversely near its middle, or in some examples towards its hinder extremity; and its margins are of a deep blackish red-brown colour.

Both sexes of this fine species were found at various places in Palestine, but most abundantly at Jerusalem and near Jericho, underneath stones and pieces of broken rock. It is an exceedingly active Spider, and very difficult to capture without injury to the legs. Its specific name is that conferred upon it by Dr. L. Koch in the MS. descriptions drawn up for his work on the *Drassides*, but the publication of which (as has been before remarked) is indefinitely delayed.

GNAPHOSA LUTATA, sp. nov. (Plate XV. fig. 7.)

Male adult, length 3 lines.

Similar in size, colour, and general structure to *G. cambridgii*, this species is of a somewhat stouter form, and may be at once distinguished by the structure of the palpi and palpal organs. The radial joint of the palpus, which is slighter, but not longer than the cubital, is bent and produced at its under and outer extremity into a long, rather slender, and very slightly tapering glossy red-brown

apophysis; this projects a little outwards, and curves gradually upwards, with an obtuse extremity; and on the outer side of this extremity there is a very small hooked, corneous, pointed continuation; the length of this apophysis is about two thirds that of the digital joint: the palpal organs are rather complex, with various corneous processes. The abdominal markings, though similar in character to those of *G. cambridgii*, are bolder and stronger, showing a longitudinal series of rather distinct yellowish chevrons on the hinder half of the upperside; these are defined by the spots, some of which are more or less confluent; the abdomen is also more thickly clothed with hairs than that of the species before mentioned.

A single example of this very distinct and easily recognizable species was captured under a stone near Beirût.

GNAPHOSA KOCHII, sp. nov. (Plate XV. fig. 6.)

Male adult, length $3\frac{1}{2}$ lines.

This Spider is also very closely allied to *G. cambridgii*, from which, however, as also from *G. lutata*, the structure of the palpi at once distinguishes it. The cephalothorax, legs, palpi, and other portions of the fore part are yellow; a forked line and some other indistinct blackish markings indicate the junctional lines of the caput, thorax, and thoracic segments; there is also a fine black marginal line to the whole cephalothorax. The *eyes* are in the ordinary relative position; but the two hind centrals are of a narrow oval form, oblique, of a pearl-white colour, and contiguous to the lateral on each side respectively; the fore centrals are the smallest of the eight, and these and the laterals of the same row are near together, but equally separated. The *legs* are long and strong (their relative length 4, 1, 2, 3), and furnished with hairs and black spines, those on the hinder pair being longest and strongest; each tarsus ends with two curved pectinated claws, but no claw-tuft. The *palpi* are rather long and moderately strong; the cubital is shorter but stronger than the radial joint, and somewhat clavate at its fore extremity, which has a group of strongish bristles at the base on the upper-side, a single one towards the fore extremity rather on the inner side, and some others in an oblique row on the inner side. The *radial* joint is rather produced at its extremity underneath; and from the outer side of this produced part there is a rather slender, tapering, prominent, very nearly straight, pointed apophysis, the extreme point of which is shortly but rather sharply hooked; it requires some care and accurate examination to see this hook plainly. The digital joint is rather large, and longer than the radial; it is prominent, with a red-brown margin to the prominent part at the base on the outer side. The palpal organs are well developed, prominent, and rather complex; they have a reddish, tapering, filiform spine, which, issuing from near their base on the inner side, and curving over their entire length, terminates in a fine slender point, beneath the extremity of the digital joint. There are other corneous processes and prominences; but this spine appears to be a distinguishing character of the palpal organs.

The *abdomen* is of a pale yellow colour, furnished with bristly hairs above, many of which are closely grouped, long, and recurved at the fore extremity; a long, wedge-shaped, brownish yellow marking occupies the longitudinal centre of the fore half; the anterior portion of this marking has a glossy appearance, and the whole of the upper surface is dotted with small dark yellowish-brown spots, those occupying the median line of the hinder half being symmetrical and disposed in pairs; the inferior or outer pair of spinners are large and nearly three times the length of those of the superior pair, and are similar to the legs in colour.

A single example was found beneath a stone near Ain Ata, under the Lebanon range. It was confused with examples of the next species (*G. conspersa*) by Dr. Koch in his examination; its distinctness, however, is very decided, and I have great pleasure in conferring upon it the name of that distinguished arachnologist.

GNAPHOSA CONSPERSA, sp. nov. (Plate XV. fig. 5.)

Male adult, length 3 lines; female adult, 4 lines.

This species, as may be inferred from what has just been observed, is very closely allied to *G. kochii*, but it may be distinguished, not only by the different structure of the palpi and palpal organs, but also in the character of the colours and markings of the abdomen. The whole Spider is of a clearer and paler yellow; the legs are longer and slenderer; the upperside of the abdomen is whitish yellow, spotted more or less thickly with small, dull, blackish spots; a long wedge-shaped, dull, blackish marking is visible in the central line of the fore half of the upperside, following which are five or more similarly coloured angular bars or chevrons, the ends of which are confluent, and make the spaces included appear as a series of strong whitish-yellow chevrons, diminishing in size as they approach the spinners; the outer inferior spinners are strong, and double the length of those of the superior pair. The *palpi* have the cubital joint strong, and of a somewhat tumid form, armed with a strong spine-like black bristle, directed forwards from the fore margin on the upperside; the bristly hairs on the radial joint are not in a group, as in *G. kochii*, but are more dispersed over the joint; the apophysis at the outer extremity of the radial joint is stronger, less prominent, and curved, the end being hooked, but not so sharply, the hook being larger and bolder, and forming part as it were of the general curve of the apophysis; the prominence at the base on the outer side of the digital joint is stronger; and there is a small but compact group or tuft of short, strong, straight, black bristles just above it, and close to the point of the apophysis on the radial joint: I could not detect any traces of such a tuft in *G. kochii*. The palpal organs are well developed, prominent, and rather complex; they differ from those of *G. kochii* in the absence of the fine spine which in that species runs from their base over the inner side to their extremity. One example differed from *G. kochii* in having the abdomen destitute of all trace of markings, while another had the upperside with the spots so thickly spread and confluent that little was visible ex-

cept some oblong whitish-yellow markings in front, and a series of strong and similarly coloured chevrons on the hinder half.

The females, for the most part, had the abdomen almost without markings; in others they were more or less faintly traced. The genital opening is of peculiar form, but not large; it is of a small transverse kidney shape above, followed by a curved corneous rim or ridge on either side, the curves being opposed and so diverging as their lines run backwards.

Two adult males and five females were found under stones on the plains of the Jordan, near Jericho. An adult male and females, with immature examples of both sexes, were also found in a similar situation close to the pyramids of Ghizeh, near Cairo, Egypt, in 1864.

GNAPHOSA PALÆSTINA, sp. nov. (Plate XV. fig. 8.)

Female adult, length 3 lines.

The *cephalothorax* of this species is of ordinary form, and the normal grooves and indentations are indicated by blackish lines and markings; those denoting the junctional line of the caput and thorax form two longitudinal curved lines, the curves directed away from each other, and their fore extremities are immediately behind the lateral eyes of the hinder row; the cephalothorax is also strongly margined with black, and is of a brownish-yellow colour, clothed with grey pubescence. The *eyes* are in the ordinary position; but those of the hind central pair are small, and not contiguous to the laterals. The *legs* are moderately long and strong; their relative length is 4, 1, 2, 3; their colour is similar to that of the cephalothorax; and they are furnished with hairs and fine spines. The *palpi* are similar to the legs in colour, and are furnished with hairs and bristles; a long, fine, straight, tapering one of the latter issues from the upper fore margin of the cubital joint. The *falces*, *maxillæ*, *labium*, and *sternum* are all normal in character, and similar in colour to the cephalothorax. The *abdomen* is short-oval in form, and broader behind than before; it is of a dull yellowish-white colour, clothed, but not densely, with short fine hairs; six rather conspicuous deep-brown impressed spots, in three pairs, forming two opposed longitudinal curved lines, occupy the fore half of the upperside; and between these is a longish wedge-shaped brown marking; following this are 5-6 angular brown bars or chevrons in a longitudinal series; the rest of the upperside, as well as the sides, are marked with irregular brown markings and striations; on the underside are two nearly parallel brown lines along its centre. The spinners of the inferior and superior pairs are of equal strength; but the former are double the length of the latter. The genital aperture is subtriangular, constricted towards the upper angle, and with a strong septum dividing it longitudinally; this septum tapers a little towards its point, which is directed backwards.

A single adult female was found under a stone near Tiberias.

Genus DRASSUS (Walck.).

DRASSUS LAPIDICOLENS, Walck. Ins. Apt. i. p. 598.

Both sexes, adult and immature, were found in various localities throughout the country, but nowhere in any abundance. The examples were some of them much larger than the examples I have usually found in England.

DRASSUS TROGLODYTES, Koch, Die Arachn. vi. p. 35, pl. 189. figs. 455, 456 = *D. clavator*, Cambr. Ann. & Mag. Nat. Hist. March 1860.

Adult examples of both sexes of this well-characterized species were found under stones occasionally throughout the country.

DRASSUS MOROSUS, sp. nov. (Plate XV. fig. 9.)

Male adult, length $2\frac{1}{4}$ lines.

This Spider is of ordinary form, and is nearly allied to *D. troglodytes*, but may at once be distinguished both by the structure of the palpi and palpal organs and by the pattern on the abdomen. The whole of the fore part (including the legs and palpi) is of a pale yellow colour; but as the Spider had evidently not long since undergone its final moult, probably its general colouring would have been, in a short time, darker. The *eyes* of the hinder row are equidistant from each other, those of the central pair being oval and placed obliquely; those of each lateral pair are removed from each other by about an eye's diameter; those of the fore central pair are further from each other than each is from the lateral on its side. The *legs* are rather long and strong, particularly those of the first pair; their relative length is 1, 4, 2, 3; they are clothed sparingly with hairs and a few fine spines.

The *palpi* are short and strong; the radial is equal in length to the cubital joint; the former is produced at its fore extremity into a strong tapering apophysis, which, when looked at from in front, is indented towards its extremity on the inner side, and slightly hollow on the outer side; its extremity is obliquely but rather roundly truncated on the inner side; the digital joint is large and oval in form, and as long as the radial and cubital joints together, including the apophysis of the former: the palpal organs are prominent, but not very complex, with some small spiny corneous prominences towards their extremity. The *falces* are long, strong, and projecting, and very prominent at their base in front. The abdomen is of an oblong-oval form and of a dull brownish-yellow-grey colour, thickly marked on the sides and above with short black striæ, black suffusions, and with several sharply angular black bars or chevrons on the hinder part of the upperside; taking, however, the *black* portions as the ground-colour, there are six rather conspicuous yellow-grey blotches visible on the fore part of the upperside, in three pairs, or two longitudinal curved lines, the curves directed towards each other; those of the hinder pair are the largest, and are situated about one third of the length of the abdomen from the spinners;

following these blotches are 2-3 yellow-grey transverse angular bars, and a large somewhat triangular patch of the same immediately above the spinners, bearing broken traces of short angular black bars; on the outer side of each of the hindermost of the six above-mentioned blotches, and a little forwards, is a larger one of the same colour, followed behind by another smaller one, each being produced backwards in an oblique yellowish lateral line or stripe; the underside has three parallel longitudinal blackish stripes, the central one being the strongest, but tapering towards its hinder extremity. The spinners are neither very long nor strong; those of the superior and inferior pairs are of equal length and strength; the spiracular plates are yellowish, and the space between them is a dark yellowish brown.

An adult male and an immature male and female were found at Jerusalem under stones.

DRASSUS LUTESCENS, Koch, *Die Arachn.* vi. p. 21, pl. 186. fig. 445.

An adult male of this species was found beneath a stone on the shores of the sea of Galilee, near Tiberias. The male of this species is described and its palpal organs figured in '*Die Arachn. Fam. der Drass.*' p. 120, pl. v. figs. 75, 76, by Dr. L. Koch.

DRASSUS TENERRIMUS, sp. nov. (Plate XV. fig. 10.)

Male adult, length $1\frac{1}{2}$ line.

This small species has the cephalothorax and falces of a clear pale yellow colour, but of ordinary form, the former showing the faintest possible dusky converging lines; the whole of the rest of the Spider is a pale whitish yellow, the abdomen marked with a small, dusky, central, longitudinal, pointed bar on the fore part of the upperside, followed by some roundish spots of the same hue. The *eyes* are in two transverse rows; the foremost one (looked at from behind) is nearly straight, the hinder one rather strongly curved, bringing the laterals into contiguity with the laterals of the front row; the interval between the hind centrals is greater than that between each of these and the hind lateral on its side; the fore centrals are unusually large, and convex, by far the largest of the eight, and each touches the lateral on its side; they are seated on a large and conspicuous black patch, and are of a dark brown colour, the rest being pearly white with black margins. The *legs* are long and slender; their relative length 4, 1, 2, 3, and very sparingly furnished with hairs and a few fine black spines. The *palpi* are long and slender: the radial and cubital joints are of about equal length and strength; the former has a small, red-brown, tapering, pointed apophysis at its fore extremity towards the outer side. This apophysis curves very slightly upwards near its point. The digital joint is large, and its fore extremity rather produced; the palpal organs are well developed and rather prominent and complex, with corneous spines and processes.

An adult male was found under a stone on the plains of the Jordan, and another in a similar situation at Hasbeiya; the large size and colour of the fore central eyes, with the black patch on which

they are seated, are a remarkable and very distinguishing character of the species.

DRASSUS MUNDULUS, sp. nov. (Plate XV. fig. 11.)

Female adult, length $2\frac{1}{4}$ lines.

The whole of the fore part of this Spider, which is of ordinary form and structure, is of a deep yellow-brown colour. The *cephalothorax* is clothed with a short, yellowish pubescence. The *abdomen* is broad oblong-oval in form, and of a dark blackish-brown colour, clothed with a somewhat golden-tinged pubescence. The *eyes* of the hind central pair are oval and near together, but not contiguous; those of each lateral pair are wide apart, but nearer together than those of the hind and fore central pairs; those of the fore central pair are rather large, and each is contiguous to the lateral of the same row on its side, but they are separate, though not very widely, from each other. The *legs* are short and strong, their relative length 4, 1, 2, 3, and furnished with hairs, and on those of the two hinder pairs are a few spines. The *falces* are strong, prominent at their base in front; and their upper surface is transversely, but not strongly, rugulose. The *maxillæ* are curved over the labium, and are transversely impressed in the middle. The *sternum* is thickly set with minute punctures, from which fine hairs appear to issue; the genital aperture is small, and arched over longitudinally by a sort of duplex red-brown septum, which diverges on either side at the hinder extremity; but, like this portion of most female Spiders, no mere description can possibly give an accurate idea of its form and structure; this can only be done by a carefully drawn and magnified sketch of that part.

Of this Spider, which is allied to *D. sericeus* (Bl.), but is much smaller and of quite a different colour, an adult female was taken under a stone on the road from Jerusalem to Nazareth, and another in a similar situation on the plains of the Jordan.

An adult male and female were found at Cairo among débris of an old wall, in 1864. The male resembles the female in colour; but the abdomen had the appearance of being thickly marked above with long, closely set, longitudinal, wavy striæ, of a deep blackish brown on a dull yellow-brown ground-colour, except in the central line of the hinder part, where they are shorter and transverse; the fore extremity of the upperside is occupied by a somewhat quadrate, coriaceous, bare and shining red-brown patch, which is narrowest behind; succeeding this are three pairs of yellowish impressed spots, with a red-brown point in the centre of each; those of the middle pair are nearer together than those of the other pairs; and the hinder pair is much further from the second than the second pair is from the first; and the six spots thus form two longitudinal curved lines, the curves of which are directed towards each other. The *palpi* (of the male) are moderately long and strong; the radial is shorter than the cubital joint, and is furnished at its outer extremity with a small, red-brown, pointed and rather prominent, corneous apophysis; the digital joint is large and of a pointed oval form; the palpal organs

are well developed, and from a strong circular prominence at the hinder part they emit a long, rather slender, red-brown filiform spine, which curves round their base, but free from the surface, and along their outer side, and after a sharpish indenture, has its extreme point (including some portion of the spine itself) in contact with a longish, strong, corneous process, which issues from near the middle of the palpal organs, and has a direction parallel with, but free from, the outer margin of the digital joint.

These Egyptian examples, although undoubtedly of the same species as those found in Palestine, were larger, measuring $3\frac{1}{4}$ lines in length.

DRASSUS DALMATENSIS, L. Koch, Die Arachn. Fam. der Drassid. p. 89, pl. iv. fig. 59.

An adult female of this species was found under a stone at Damascus.

DRASSUS LACERTOSUS, sp. nov. (Plate XV. fig. 12.)

Male adult, length $5\frac{1}{2}$ lines.

This fine and remarkable species is allied to *D. lapidicolens* (Walck.), but may be easily distinguished by strong differences in some parts of the structural detail. The whole Spider is of a pale yellowish colour, the abdomen being also tinged with dusky drab, and thinly clothed with fine hairs (both on the cephalothorax and abdomen) of a pale colour and somewhat silky nature. The *cephalothorax* has the caput broad and truncate in front, and its upper surface more convex and rounded than in *D. lapidicolens*. The *eyes* are small, of a pearl-white margined with black, and placed in two nearly parallel transverse rows; the four central eyes form a square; those of each lateral pair are placed obliquely, and are nearly, if not quite, as widely separated from each other as those of the fore and hind central pairs; those of the latter are nearer together than each is to the lateral of the same row on its side; while the four of the front row are separated from each other by equal spaces. The *legs* are moderately long and strong; their relative length 4, 1, 2, 3; and they are furnished sparingly with hairs and spines; the tarsi and metatarsi of the first and second pairs, and the tarsi of the third and fourth, have a double, parallel, longitudinal series of short, strong, black, close-set bristles; these spread outwards on either side; those on the tarsi are the densest, and are confluent with the ordinary claw-tuft.

The *palpi* are long and strong: the humeral joint is long and unusually strong, being equal in length to the cubital and radial together, and stouter than the femora of the first pair of legs; it enlarges gradually from its base to the extremity, near which, on the upperside, is a short, transverse row of three short, strong, somewhat tooth-like and slightly curved black spines, the outer spine being much shorter than the inner one, and the length of the middle one intermediate between them: the radial joint is long and cylindrical, half as long again as the cubital, but not so strong, and is destitute of any prominence or apophysis: the digital joint is small, and of a

narrow elongate-oval form; it is about half the length of the radial joint, and has a few short spiny bristles near its margins: the palpal organs are small, consisting of an oval, slightly convex, corneous lobe from which a small black spine issues at the extremity on the inner side, and a small, dark-coloured, corneous prominence at the outer extremity, being very much like those of *D. lapidicolens*. The *palpes* are long, strong, a little prominent at their base in front, and project very slightly forwards. The maxillæ are very strong; they are straight but enlarged at their extremities, which are somewhat rounded, and inclined towards the labium, strongly impressed obliquely across their middle portion, and very prominent, or gibbous, at their base. The labium is of a somewhat oblong form, but wider in the middle than either at its base or apex, which last is truncate; these parts, as also the margins of the sternum, have some erect black bristly hairs upon them. The *abdomen* is oval, and projects a good deal over the base of the cephalothorax; the spinners are rather long and cylindrical in form, those of the superior and inferior pairs being of equal length.

A single adult male of this very distinct *Drassus* was found under a stone at Jerusalem.

DRASSUS SENILIS, sp. nov. (Plate XV. fig. 13.)

Female adult, length $3\frac{3}{4}$ lines.

This Spider is allied to *D. mundulus* (*suprà*, p. 234), as well as to *D. sericeus* (Bl.); it is of ordinary form and structure. The *cephalothorax* is of a dark bright red-brown, clothed pretty densely with a fine, greyish-white, silken pubescence, among which are a few slender, bristly black hairs.

The *eyes* are in two slightly and equally curved rows, those of the lateral pairs being brought nearer to each other than the two fore centrals are from the two hind centrals; these form a rectangle whose transverse diameter is the shortest; the fore centrals are the largest of the eight, and each is contiguous to the lateral on its side; the intervals between the eyes of the hinder row are equal. The *legs* are strong, not very long, their relative length 4, 1, 2, 3, and of a yellow-brown colour; those of the first and second pairs are the darkest, especially the tibiæ, tarsi, and metatarsi; they are furnished with hairs, and (chiefly on the third and fourth pairs) with spines; the tarsi and metatarsi of the first and second pairs, with the tarsi of the third pair, have a double longitudinal series of short, bristly, divergent hairs (perhaps the tarsi of the fourth pair had been denuded of similar hairs?). The *abdomen* is oval, truncate before and broadest behind; it projects a good deal over the base of the cephalothorax, and is of a dull brownish-yellow colour, thickly clothed with blackish and grey hairs, most of which are of a somewhat silky nature; there is a strong black-brown stripe, broader behind than before, on the upperside in the central line of the fore part; and the space immediately round this shows the yellowish ground-colour more distinctly than the rest of the surrounding surface; the underside is less thickly clothed with hairs than the upper, and shows two fine, dusky, brownish, longitudinal and nearly parallel lines along its centre.

The genital opening is very small, of an oval form, with deep-blackish red-brown margins, and placed near the centre of a somewhat heart-shaped, slightly convex, reddish yellow-brown, glossy plate or scale.

An adult female was found under a stone on the plains of the Jordan, and another (in 1864) in a similar situation near Alexandria (Egypt); in this last example the surface of the abdomen surrounding the dark stripe on its fore side was no freer from hairs than the rest.

DRASSUS INVALIDUS, sp. nov. (Plate XV. fig. 14.)

Male adult, length $2\frac{1}{2}$ lines.

This species is very similar in form and general structure to *D. lapidicolens* (Walck.), but differs in colour and markings, and especially in the structure of the palpi and palpal organs; it is also nearly allied to *D. morosus* (*suprà*, p. 232).

The *cephalothorax* is of a yellow-brown colour tinged with red-brown before. The *legs* and *palpi* are yellow, the *falces*, *maxillæ*, *labium*, and *sternum* reddish yellow-brown; the abdomen is dusky whitish brown. The *eyes* (looked at from behind) are in two parallel rows, rather more widely removed from each other than usual; the fore central eyes are further from each other than each is from the lateral on its side; the hind centrals are oval, oblique, and near together, but not contiguous, while at the same time they are much further removed from the laterals of the same row than from each other; the eyes of each lateral pair are separated by a space equal to that which separates each hind central eye from the lateral on its side, or from the fore central opposite to it. The *legs* are moderate in length and strength, their relative length 1, 4, 2, 3, and furnished with hairs and a few spines on the *tibiæ* and *metatarsi* of the third and fourth pairs. The *falces* are strong, straight, and project a good deal forwards.

The *palpi* are rather slender, but moderate in length: the radial and cubital joints are of about equal length; the former has a not very long, nor strong, rather tapering and pointed apophysis at its fore extremity on the outer side; the digital joint is rather large and of an oval form; the palpal organs are well developed, having a strong and somewhat furcate, corneous, red-brown appearance at their fore extremity; the *maxillæ* are strong, inclined to the *labium* and enlarged and rounded at their extremities, but the transverse impression is slight. The abdomen is oval, narrower behind than before; it is of a dusky hue, showing a series of paler angular bars, or chevrons, on the hinder part, near the spinners.

A single example was found under a stone on the plains of the Jordan.

DRASSUS NANUS, sp. nov. (Plate XV. fig. 15.)

Female adult, length $1\frac{1}{2}$ – $1\frac{3}{4}$ line.

This small species has the *cephalothorax* yellow, tinged with yellow-brown, and margined with a black line. The *legs* and *palpi* are rather paler, except the four last joints of the first pair, which

are strongly suffused with black, as are also (though slightly) the corresponding joints of the second pair.

The whole Spider is of ordinary form and structure, and appears to be allied to *Melanophora electa* and *M. pumila* (Koch). The *eyes* are in two nearly parallel curved rows, the curves directed forwards; those of the front row are very close to each other; the laterals, which are larger than the centrals (if not the largest of the eight) are contiguous to them, while they (the centrals) are but slightly removed from each other; the interval between the eyes of the hind central pair is greater than that between each of them and the hind lateral on its side; the eyes of each lateral pair are obliquely placed and removed from each other by about one half of an eye's diameter. The *legs* are short and strong, especially those of the first pair, and the femora of all the legs; they are tolerably thickly furnished with hairs; and there are a few longish spines on the tibiæ and metatarsi of the two hinder pairs. The *maxillæ* are strong, but of ordinary form, a little curved, and inclined to the *labium*, which is oblong, and rounded at the apex. The *falces* are small, moderately strong, straight, subconical, and nearly vertical. The *abdomen* is of an oblong-oval form and of a pale dusky brown colour, with a strong tuft of black recurving bristles beneath the fore margin; a largish marking of a long wedge-shape, and of a darker colour than the rest of the abdomen, occupies the median line of the fore half on the upperside; and on either side of this is a longitudinal, curved row of several small, pale reddish-brown, narrow, elongated spots, the curves directed inwards; the underside is of a pale whitish yellow. The spinners are pale yellow, those of the inferior pair are longer and stronger than those of the superior. The genital aperture is small, apparently transverse, and divided longitudinally by a narrow, arched, corneous kind of septum.

Adult females of this species were found under stones near Jericho and at Jerusalem.

DRASSUS INFUMATUS, sp. nov. (Plate XV. fig. 16.)

Male adult, length 3 lines; female adult, length $3\frac{1}{4}$ to $4\frac{1}{2}$ lines.

This Spider is closely allied to *D. lapidicolens* (Walck.), which it resembles both in general form, structure, and colour; but it is much smaller, and its caput is, perhaps, narrower; the legs also are shorter and stronger, and the *palpi* also shorter; the radial joint is slightly shorter than the cubital, and has a rather prominent but small sharp-pointed red-brown spiny apophysis at its extremity on the outer side; the digital joint is small, but as long as the radial and cubital joints together, and larger in proportion than that of *D. lapidicolens*; the palpal organs are small, consisting of a somewhat circular corneous lobe, with a small black curved spine on its inner side, the sharp point directed forwards, and a similar but shorter one on the inner side, but more prominent; the fine pale needle-like point of the latter directed rather backwards and downwards; the transverse impression of the *maxillæ* is stronger than in the species before mentioned, and their extremities are not so dilated; the *eyes* also of the hind centra]

pair are rather wider apart in comparison with the rest; and the ocular area is less extended.

The female resembles the male, and the genital aperture is very similar to that of *D. lapidicolens*, ♀, though a difference is observable on comparison, which is yet difficult to give by a description.

An adult male was found under a stone on the plains of the Jordan; and an adult of each sex in an old ruined mud wall near Cairo, Egypt, in 1864.

DRASSUS SCRUTATUS, sp. nov. (Plate XV. fig. 16a.)

Male adult, length $3\frac{3}{4}$ lines; female adult, length $4\frac{1}{2}$ lines.

This Spider is of ordinary form and general structure. The *cephalothorax* is of the deepest black-brown colour tinged with red. The *eyes* are small and not easy to be well seen; they are in two rather short transverse nearly straight, parallel rows; looked at from in front the foremost row is curved, the curve directed upwards; the eyes of each lateral pair are as far from each other as those of the fore central pair are from those of the hind central pair; these latter are oval, oblique, and each is very near (almost contiguous) to the lateral nearest to it of the same row; the eyes of the foremost row are very near, but apparently not quite contiguous to, each other. The *legs* are strong and moderately long, their relative length 4, 1, 2, 3, and they are furnished with hairs, and a few spines on the tibiæ and metatarsi of the two hinder pairs; their colour is dark black-brown tinged with greenish, the tarsi and metatarsi being paler, and of a dark yellowish brown. The *palpi* are short and of a deep blackish-brown colour; the radial joint is shorter than the cubital, and has a not very large, pointed apophysis at its outer extremity, its inner extremity being also rather spreading or prominent; the digital joint is large and oval, longer than the radial and cubital joints together; the palpal organs are well-developed and moderately complex, with closely compacted corneous spines and prominences, a portion of which, towards their extremity on the outer side, is quite white, the rest being black and red-brown. The *fulcres* are rather long and strong; they are prominent at their base in front, and project forwards. The *maxillæ* are exceedingly strong at the insertion of the palpi, and their transverse impression is strong and oblique. The *sternum* is glossy and thickly dotted with minute punctures; these parts, with the labium, are of a deep brown tinged with yellowish. The *abdomen* is of a rather narrow oblong-oval form and of a deep black colour tinged with green, and is slightly hairy; the spinners are long, strong, and prominent; those of the inferior pair are longer than those of the superior. The female resembles the male in colours and general characters.

Adults of both sexes were found under stones on the plains of the Jordan.

DRASSUS OMISSUS, sp. nov. (Plate XV. fig. 17.)

Female adult, length $3\frac{1}{4}$ lines.

The general structure and form of this Spider is of ordinary cha-

racter. The *cephalothorax* is of a pale yellow-brown, deepening on the caput and clypeus; the junctional lines of the caput, thorax, and thoracic segments are indicated by dark converging lines. The *eyes* are not very unequal in size, and are tolerably closely grouped together; those of the hind central pair are oblique, oval, and nearer to each other than each is to the lateral on its side; the front row is a little shorter than the hinder one, and the eyes of its central pair are further from each other than each is from the lateral on its side; those of each lateral pair are separated by an interval of less than the diameter of the hinder one. The *legs* are rather short, but moderately strong; they are furnished with hairs and a few fine spines; their colour is yellow, those of the first and second pairs are a little suffused with yellow-brown. The *palpi* are yellow-brown in colour. The *falces* moderately long, strong, prominent at the base in front and a little projecting; their colour is deep red-brown. The *maxillæ* are of normal form and of a dark yellowish red-brown colour, but lighter in hue than the falces. The *labium* is similar to the maxillæ in colour, of oblong form, rounded at the apex; and the sternum is yellow-brown. The *abdomen* is of an oblong-oval form, and its colour dull yellowish; on the upperside is a largish dusky brown elongate wedge-shaped marking in the central longitudinal line of the fore part; this is followed, towards the spinners, by a series of indistinct but broadish angular lines of the same hue. The genital aperture is of a distinct and characteristic form, being a rather large and somewhat circular opening with a longitudinal septum whose margins are strongly angular; and below this are two round boss-like glossy but slight prominences.

A single adult female was found under a stone at Hebron.

DRASSUS UNICOLOR, sp. nov. (Plate XV. fig. 18.)

Female adult, length $2\frac{1}{2}$ lines.

The whole of the fore part of this Spider is yellow, the cephalothorax being rather darker than the legs, and clothed with fine greyish hairs. The *cephalothorax* is of ordinary form but rather narrow in front. The *eyes* are in two curved rows, the curves directed backwards; the hinder row is more strongly curved than the front one; the eyes of the hind central pair, which appear to be the largest of the eight, are separated by a slightly less interval than that between each and the lateral eye on its side; the interval between the fore centrals is greater than that between each and the fore lateral on its side, from which it is separated by a very small space; the intervals between the eyes of the hind central and those of the fore central pair are equal, but are less than that which separates each of the former from the fore central opposite to it. The *legs* are rather short but tolerably strong; their colour is yellow and they are furnished with hairs, and a few spines on those of the two hinder pairs. The *falces* are small, vertical, and not prominent in front. The *maxillæ* are of normal form, and are strongly inclined to the labium. The *sternum* is oval, pointed behind; and its colour is yellow, narrowly margined with red-brown; and it is a little indented between the basal joints of

the legs, as well as thickly dotted with minute punctures. The *abdomen* is of an oval form and of a washed-out drab-yellow colour; the genital aperture is small and of characteristic form, not easy to be described, but better seen in the figure given (Pl. XV. fig. 18).

A single adult female of this Spider was found under a stone on the Lebanon.

Genus MELANOPHORA (Koch).

MELANOPHORA LÆTA, sp. nov. (Plate XV. fig. 19.)

Male adult, length $2\frac{1}{2}$ lines.

The *cephalothorax* of this species (which is of ordinary form and structure) is of a yellowish red-brown colour (in one example suffused slightly with dusky black). The *eyes* are rather compactly grouped in two transverse nearly straight parallel lines, of which the foremost is the shortest; those of the hind central pair are oval, and further from each other than each is from the lateral on its side; the position also of the fore centrals with respect to the fore laterals is similar; and these last are the largest of the eight, and each of them with the hind lateral and hind central on its side form an isosceles triangle, of which the hind lateral eye is the apex. The *legs* are moderate in length and strength, and are of a yellow-brown colour more or less suffused with dusky black; they are furnished with hairs and, on the tibiae and metatarsi of the third and fourth pairs, a few spines; the terminal tarsal claws of the legs of the fourth pair are longer than those of the other legs.

The *palpi* are similar in colour to the legs, and short; the radial joint is very short, not exceeding one-half of the length of the cubital joint, and it has a small slightly tapering, but not sharply pointed, apophysis from its outer extremity; the digital joint is large, considerably exceeding in length that of the radial and cubital together; the palpal organs are well-developed but not very complex, consisting of some closely compacted whitish and red-brown corneous processes. The *falces* are moderate in length and strength; they project forwards and are very prominent, and indeed rather abruptly humped near their base in front, and the humped portion is furnished with longish black curved bristles. The *maxillæ* are strong and broad at the insertion of the palpi, also curved and inclined to the labium, and transversely impressed. The *labium* appeared to be of peculiar form, having the appearance of an elongate triangular piece, around the upper half of which another portion spreads out equally on all sides in a somewhat quadrate form.

The *abdomen* is small and of an oblong-oval form; it is of a dark sooty-black colour, pretty thickly clothed with short silky hairs; on the fore margin is a largish semicircular (the curve directed forwards) coriaceous yellow-brown patch, indistinctly visible. The spinners are moderately strong, long, and prominent; those of the inferior pair are the longest and strongest; the underside of the abdomen is paler than the upperside.

An immature female differed only in being larger and more brightly coloured.

An adult male was found on the plains of the Jordan, and an immature female at Jerusalem, under stones; also, in 1864, an adult and an immature male with an immature female at Cairo; this last adult male, however, was much smaller, and (as were also all the Egyptian examples) of a darker colour than those found in Palestine.

MELANOPHORA PICINA, sp. nov. (Plate XVI. fig. 20.)

Female adult, length 4 lines.

This species is larger than *M. læta*, which it resembles so exceedingly closely in form and structure, that, but for Dr. Koch's opinion, I should have hesitated to separate it from that species; its colours, however, are darker, the cephalothorax, legs, and other fore parts being deep brown tinged with yellowish, and the legs also with a blackish dusky hue; the sternum is thickly marked with small punctures; and there is no trace of a coriaceous yellow-brown patch on the fore margin of the abdomen. The *labium* is of the same form as that of *M. læta*. The genital aperture is not large; it is of a somewhat subtriangular form covered by a sort of flap of a blunt-angled diamond-shape; in front of each fore corner of the aperture is a rather conspicuous round, glossy, corneous kind of boss, of a reddish-yellow colour.

An adult female of this species was found under a stone on the plains of the Jordan—and another in a similar situation near Alexandria, Egypt, in 1864.

MELANOPHORA CARBONARIA, sp. nov. (Plate XVI. fig. 21.)

Male adult, length 2 lines.

This Spider is of a deep black colour, except the legs, palpi, falces, maxillæ, and labium, which are of a more or less deep yellow-brown. In form and structure it is of the ordinary type. The *eyes* are in the usual position; but the hind centrals being placed obliquely, they appear to be nearer than usual to the fore laterals; those of the hinder row are close to each other though about equally separated; and the same appears to be the case in regard to the eyes of the front row, which, however, is very slightly shorter than the hinder one, but curved upwards when looked at from in front. The *legs* are strong and rather long; their relative length is 4, 1, 2, 3; and they are furnished with hairs and a few spines on the tibiæ and metatarsi of the two hinder pairs; the tarsi and metatarsi are much paler than the rest of the legs.

The *palpi* are short and strong; the radial joint is equal in length to the cubital, and has a strong and somewhat tapering apophysis from its outer extremity; this apophysis curves upwards and bends a very little inwards near its extremity, which is not pointed but rather dilated, and with the appearance, when looked at in one position, of being slightly emarginate or bifid; the digital joint is rather large; the palpal organs well-developed and prominent, consisting of several corneous processes; and a slender, curved, sharp-pointed spine issues from their outer side and curves round in rather close contact with them to their fore extremity.

The *abdomen* is small and of an oblong-oval form; it is black, with a large glossy coriaceous patch on the fore margin of a deep black-brown hue, and of a somewhat subtriangular form; the apex of this patch is directed backwards and extends to very nearly one-half the length of the abdomen. The spinners are black; those of the inferior pair are long and strong, those of the superior very short.

A single example of this very distinct species was found under a stone on the plains of the Jordan.

MELANOPHORA TRAGICA, sp. nov. (Plate XVI. fig. 22.)

Male adult, length 3 lines.

The general form and structure of this Spider is of the ordinary type; but the *cephalothorax* is rather narrower before than in some other species; it is of a deep rich red-brown colour, with indistinct converging veiny-looking black lines on the sides. The *eyes* are closely grouped in the ordinary position of two nearly, or quite, parallel straight lines; the foremost line is slightly the shortest; the eyes of each line appeared to be equally separated from each other; those of the hind central pair are smaller than the laterals of the same row, and of an oblong form. The *legs* are short and strong; their relative length 4, 1, 2, 3; and they are rather lighter-coloured than the cephalothorax; they are furnished with hairs and, on the tibiae and metatarsi (principally the latter) of the two hinder pairs, with a few spines.

The *palpi* are moderate in length and strength; the radial is shorter than the cubital joint, and has its outer extremity produced into a not very long apophysis; this is broad and strong at its commencement, but at about the middle of its length from the underside it goes off abruptly into a tapering sharp-pointed form on the upper-side, with a rather upward direction (the palpus must be viewed with the Spider held in profile in order to see this conformation of the radial joint); the digital joint is large, and the palpal organs well-developed; but these are not very complex, and their corneous processes are closely compacted. The *maxillae* are transversely impressed, curved, and inclined to the labium; these parts are similar to the legs in colour, the maxillae being tipped with pale whitish yellow. The *sternum* is of a bright reddish yellow-brown colour, densely marked with exceedingly minute punctures.

The *abdomen* is of an oblong-oval form and rather large, being broader behind than before; it is of a sooty-brown colour, and has a large, somewhat semicircular, coriaceous patch on its fore margin, of a colour similar to that of the cephalothorax, but with a strong shining coppery tinge; the underside is paler than the upper. The spinners are of the ordinary character; those of the superior pair are smaller and shorter than those of the inferior.

A single example of the adult male was found under a stone on the plains of the Jordan.

MELANOPHORA HELVOLA, sp. nov. (Plate XVI. fig. 23.)

Male adult, length $1\frac{3}{4}$ line.

This small species is of a uniform pale luteous yellow colour, the abdomen being paler than the rest. In form and general structure it is of the ordinary type, but the position of the *eyes* rather different; they are in a compact and rather small group, disposed in two transverse curved rows, the curves directed away from each other. The hinder row is the longest and the most curved; the eyes of the hind central pair are the largest of the eight, and of a rather oval form, oblique, and slightly nearer together than each is to the lateral on its side; those of the fore central pair are rather further from each other than each is from the fore lateral on its side; those of each lateral pair are very near to each other, but not contiguous. The *legs* are strong, but not very long; they are sparingly furnished with hairs, and (chiefly on the tibiæ and metatarsi of the hinder pair) with some blackish spines. The *palpi* are moderately long and strong; the radial joint is a little shorter than the cubital, and is slightly produced at its outer extremity into a small and not very sharp-pointed apophysis; the digital joint is of moderate size; and the palpal organs are rather prominent, not complex, and have a strong curved corneous process, or spiny projection, issuing from near their base on the inner side; this process curves round, and has its sharp point near their outer extremity. The *falces* are a little prominent at their base in front, but not very long nor very strong. The *maxillæ* and *labium* are of normal form. The *abdomen* is oblong-oval, rather broader behind than before. The spinners are strong and prominent, those of the inferior pair being stronger and a little longer than those of the superior.

A single example of the adult male of this Spider was found under a stone on the plains of the Jordan.

MELANOPHORA SCUTATA, sp. nov. (Plate XVI. fig. 24.)

Male adult, length $3\frac{1}{2}$ lines.

The whole of the fore part, including the legs and palpi, is of a deep brown colour, tinged slightly with yellow; but the legs get paler towards their extremities, the tarsi of those of the third and fourth pairs being of a pale dull yellowish hue; the colour of the abdomen is a dull sooty black, and that of the spinners, which are prominent (those of the inferior pair being longest and much the strongest), is black-brown; the spiracular plates are strong and of large size, somewhat quadrate in form, and of a coriaceous nature, covered with minute impressed points or punctures, and of a dull yellow-brown colour.

In general form and structure this Spider is of the ordinary type; but the *cephalothorax* is broad, and truncate before, and scarcely at all constricted on the sides forwards. The *falces* are long, strong, and projecting, and prominent in front near their base; the *maxillæ* are very strong at their lower half, the palpi springing from nearer their extremity than their base; the *labium* is broad-oblong, somewhat curved outwards on the sides; it has its centre, in a longitudinal line, prominent, and presents the peculiarity (noticed in respect of *M. læta*, p. 241, and observable in others of this genus) of a kind

of flange or depressed margin, which runs round the sides and apex; the labium as well as the maxillæ and sternum have their surface punctuose.

The *legs* are furnished with longish, prominent, dark hairs and bristles, and some strongish spines on the tibiæ and metatarsi of those of the third and fourth pairs; their relative length appeared to be 1, 4, 3, 2; but the difference between 1 and 4 is very slight.

The *eyes* are in two, almost straight, nearly parallel transverse lines, of which the foremost is the shortest; they are small and closely grouped together; the interval between those of the hind central pair is greater than that which separates each from the lateral of the same row on its side; and a similar remark applies to the eyes of the foremost line, the interval, however, between the fore centrals being *proportionally* greater, though *actually* nearly the same as that between the hind centrals; the fore laterals appeared to be the largest of the eight.

The *palpi* are moderate in length and strength; the radial is shorter than the cubital joint, and has a small, not very sharp-pointed tapering apophysis from its outer extremity, adhering rather closely to the digital joint; this latter joint is large, oval, and its length about equals that of the humeral joint; the palpal organs are well developed, but not very complex, and, though characteristic in structure, do not present any remarkable feature.

A single adult male under a stone near Jericho.

MELANOPHORA URSINA, sp. nov. (Plate XVI. fig. 25.)

Female adult, length $3\frac{3}{4}$ lines.

Of the ordinary general form and structure, this Spider has the *cephalothorax* of a dark yellow-brown colour, with a narrow black margin, and slight converging black lines and markings, which indicate the normal grooves and indentations. The *eyes* are closely grouped in two transverse, nearly straight, parallel rows, the foremost row being slightly the shortest; those of the hinder row appeared to be separated by equal though very slight intervals; but of the foremost row the centrals are further from each other than each is from the lateral on its side. The *legs* are strong and moderately long, their relative length 4, 1, 2, 3; they are furnished with hairs, and with a few rather fine spines on the tibiæ and metatarsi of the two hinder pairs. The *falces* are similar to the cephalothorax in colour; they are neither long nor very strong, and are but very slightly prominent at their base in front; their outer surface is clothed pretty densely with short, strong, black bristles; the maxillæ are not very long, but moderately strong; their transverse impression is strong, and they are curved and inclined to the labium, which is oblong, and rather rounded at its apex. The *sternum* is covered with minute punctures; these parts are of a yellow-brown colour. The *abdomen* is of a short oblong-oval form, and of a dull sooty brown-black colour above, clothed with short fine hairs, but it is paler on the underside; below the fore margin are some short, strongish, bristly black hairs, which curve upwards; about the middle of the upperside are six small pale

and rather elongate spots, in two opposed curves (the curves directed inwards), or in three pairs, of which the intermediate pair are much nearer to the fore than to the hinder pair. The spinners are strong and prominent, those of the inferior pair being the longest and strongest. The genital aperture is of a subtriangular form, with two circular reddish-brown corneous-looking glossy bosses within the triangle at its base.

Two adult females were found under stones on the plains of the Jordan.

MELANOPHORA INAURATA, sp. nov. (Plate XVI. fig. 26.)

Male adult, length 3 lines; female adult, 3 to $3\frac{1}{2}$ lines.

The general form and structure of this species is of the ordinary type; but the upper part of the caput is rather more convex than usual. The *cephalothorax* is of a very deep rich black chestnut-brown colour, and its surface quite bare (perhaps denuded?), and thickly covered with minute impressed marks and punctures. The *eyes* are in two transverse, nearly straight and parallel rows; the hind centrals are smaller than the laterals, and separated from each other by a wider space than each is from the hind lateral on its side; the fore centrals are the smallest of the eight, and are rather further from each other than each is from the fore lateral on its side, the fore laterals being apparently the largest of the eight. The *legs* are moderate in length and strength (their relative length 4, 1, 2, 3), and are furnished with fine hairs, and a few spines on the metatarsi and tibiae of the third and fourth pairs; they are similar in colour to the cephalothorax, except the tarsi and metatarsi, which are of a pale yellow-brown. The *palpi* are moderately long and strong; the radial is shorter than the cubital joint, and has a small slightly tapering but not very sharp-pointed red-brown apophysis at its extremity on the outer side, which adheres closely to the side of the digital joint; this joint is moderate in size; and the palpal organs are well developed but not very complex; the corneous processes are white, black, and red-brown, and are rather compactly fitted together. The *falces* are similar in colour to the cephalothorax, strong, very prominent at their base in front, and furnished pretty thickly with black bristles. The *maxillæ* and *labium* are of a rich chestnut-brown colour, and are normal in size and form: the maxillæ are tipped with yellowish, they have a strong transverse impression, and are strongly curved and inclined to the *labium*, which is perceptibly convex along the middle. The *sternum* is lighter-coloured, and is thickly covered with punctures. The *abdomen* is of an oblong-oval form, a little broader behind; its upperside is of a dark sooty colour, and is thickly clothed with short fine hairs, which in some lights have a somewhat dull greenish golden hue; the underside is dull pale yellow-brown, with two fine longitudinal, central, dark impressed lines. The spinners are small and prominent; those of the superior pair are shorter by half a length than those of the inferior. The female resembles the male.

An adult male was found under a stone at Nain, and an adult

example of each sex in a similar situation near Alexandria (Egypt) in 1864.

MELANOPHORA PEDESTRIS, Koch, Die Arachn. vi. p. 82, pl. 200. fig. 489.

An adult male of this species (which is not rare in Europe generally, and has also been found in England) was found under a stone at Nain.

MELANOPHORA CAUCASIA, L. Koch, Die Arachn. Fam. der Drassid. p. 141, pl. 6. fig. 87. (Plate XVI. fig. 27.)

An adult male and female were found in company with *M. pedestris* at Nain.

MELANOPHORA GRACILLIMA, sp. nov. (Plate XVI. fig. 28.)

Male adult, length $1\frac{1}{2}$ line.

This small but very distinct species is of the ordinary general form and structure. The *cephalothorax* is glossy, and of a deep rich black chestnut-brown colour. The *eyes* are rather closely grouped, in two transverse, nearly straight, parallel rows; those of the hind central pair are slightly nearer to each other than each is to the hind lateral on its side, while the fore centrals are further from each other than each is from the fore lateral on its side, to which it is, in fact, almost, if not quite, contiguous; all the eyes, except those of the fore central pair, are pearly white. The *legs* are strong and rather long (their relative length 4, 1, 2, 3), especially those of the first pair; their colour is yellow, the genual, tibial, and metatarsal joints of all except those of the third pair being more or less suffused with black-brown; the legs are furnished with hairs and (principally on the metatarsi and tibiæ of the third and fourth pairs) a few spines. The *palpi* are neither long nor very strong; the cubital is longer than the radial joint, and has a sharp-pointed red-brown apophysis from its fore extremity, rather on the outer side; the radial joint is emarginate at its upper fore margin; the digital joint is rather large; and the palpal organs are very prominent; from a somewhat circular lobe at their hinder part there issues, from the outer side, a black filiform spine, which curves over them to the inner side, and thence round the inner margin to their extremity; the lobe from which this spine issues has also a small dark corneous prominent point at its hinder part. The *abdomen* is short, and of an oblong-oval form, broader behind than before; its colour is black, and the upper surface of its fore half is almost entirely occupied by a large, somewhat oval, shining coriaceous integument, of a deep rich black chestnut-brown colour. The *female* resembles the male in colour, but is a little larger, and is without the shining coriaceous patch on the abdomen.

Examples of both sexes were found under stones on the plains of the Jordan. The apophysis from the *cubital* joint is, as far as I am aware, a unique character in this genus, if not in this family.

MELANOPHORA CARMELI, sp. nov. (Plate XVI. fig. 29.)

Male adult, length $2\frac{1}{2}$ lines.

This species, whose general form and structure is of the usual type, differs from all known to me in having the legs, which are of a yellow-brown colour, broadly annulated with black-brown (the femora and tibiæ of the male, however, being entirely black or black-brown). The *cephalothorax* is of a deep black-brown colour. The *legs* are long, their relative length 4, 1, 2, 3, rather strong, and furnished with hairs and a few spines. The *palpi* are moderately long, and not very strong; the radial is equal to the cubital joint in length, and has a small sharp-pointed red-brown corneous apophysis from its extremity on the outer side; the digital joint is rather small, and the palpal organs are neither very prominent nor complex, but there is a rather closely coiled, filiform, red-brown and black spine at their extremity. The *maxillæ* are normal; the *labium* large, oblong, and rounded at its apex: these parts, with the sternum, which is thickly marked with impressed punctures, are of a dark yellow-brown, the maxillæ tipped with pale whitish. The *abdomen* is of a narrow oblong-oval form and a dark sooty-black colour, and has a bare, but not shining, coriaceous patch on the fore part of the upperside; the spinners are of moderate size. A female was much smaller (although quite adult) than the male, but resembled the male in colour and markings. The genital aperture is of characteristic form.

Two adult males and one female were found under stones on Mount Carmel, near El Mûkrakah, the supposed place of Elijah's sacrifice.

Genus MICARIA (Westr.).*MICARIA IGNEA*, sp. nov. (Plate XVI. fig. 30.)

Female adult, length $1\frac{1}{2}$ line.

The *cephalothorax* is of a narrow oval form, and, when looked at in profile, curves slightly but regularly from the hinder margin to the eyes; it is of a bright and rather coppery-red colour, clothed with a few yellowish hairs. The *eyes* are in two almost concentric curved rows, the curves directed backwards; those of the foremost row are larger than those of the hinder one; the centrals are the largest of the eight, and are separated by a very narrow interval, while each is contiguous to the lateral on its side; the hind centrals are further from each other than each is from the hind lateral on its side, the interval between them being equal to that between the two lateral eyes, and the interval between the hind centrals is equal to that between each and the fore lateral on its side. The *legs* are slender, those of the hinder pair being much the longest; their relative length is (apparently) 4, 1, 2, 3; and their colour is yellowish, clouded with reddish yellow and red-brown; they are furnished sparingly with hairs and a few short fine spines. The *falces* are vertical, and neither long nor very strong; they are similar in colour to the cephalothorax. The *abdomen* is long and narrow, and of a somewhat cylindrical form;

it is joined to the cephalothorax by a short but distinct pedicle ; the fore half is of a dull yellowish colour, tinged with red, the hinder part black ; the whole is furnished with scaly hairs, reflecting green and golden metallic tints. A broken transverse line or bar of white hairs indicates the junction of the black and yellow portions ; the abdomen is slightly constricted at this part, chiefly by a depression across the upperside ; the underside is similar to the upper, except that the black and yellow portions run into each other gradually. The genital aperture is small and indistinct, but characteristic in form. The *maxillæ*, *labium*, and *sternum* are similar in colour to the cephalothorax.

Examples of the female, both adult and immature, were found under stones beneath the walls of Jerusalem, between the Damascus and St. Stephen's gates. They were exceedingly active, and so very similar to the numerous ants inhabiting the same places, as to make their capture very difficult ; the adult males (of which I saw several) escaped, owing to this cause. In the search for this Spider I met with the only molestation that occurred to me during the whole tour in Palestine,—several natives appearing to think it a good opportunity to stone me from the walls, obliging me to beat as quick and as dignified a retreat as might be practicable under the circumstances.

MICARIA TRIFASCIATA, sp. nov. (Plate XVI. fig. 31.)

Female adult, length 3 lines.

This fine and distinctly marked species is of ordinary general form and structure. The *cephalothorax* is of a deep chestnut-brown colour, clothed thinly (chiefly on the sides and caput) with short greyish-white hairs. The *eyes* are not so closely grouped as in most of the Spiders of this genus : the hinder row is straight ; and its central eyes are small, oval, very oblique, and separated by about double the interval which separates each of them from the hind lateral on its side ; the foremost row is much shorter than the hinder one, and is a little curved, the curve directed forwards ; the eyes of this row appear to be larger than those of the hinder row, and the interval between those of its central pair is greater than that which separates each from the fore lateral on its side ; this lateral eye and the central of the same row on its side appeared indeed to be nearly, if not quite, contiguous to each other ; the four central eyes form very nearly a square, whose foremost side is the shortest. The *legs* are moderate in length and strength, their relative length 4, 1, 2, 3, and their colour yellow-brown, with the femora and a portion of the femoral and tibial joints of the two hinder pairs dark blackish brown, giving them a somewhat annulate appearance ; the legs of the first and second pairs are rather darker than the rest. The *falces* are rather small and vertical, and, with the sternum (which is of an oval shape), similar to the cephalothorax in colour. The *abdomen* is oblong-oval, and black, with a broadish transverse band (somewhat emarginate on its hinder edge) of white hairs on the fore margin ; another similar transverse band (but broader and interrupted in the middle) crosses the abdomen just before the central line ; this band fines off just at

the underside of the abdomen on each side ; and on either side of the extremity of the abdomen, near the spinners, is a conspicuous spot formed by white hairs ; the spinners are rather long and prominent, those of the inferior pair are a little longer and stronger than those of the superior pair.

But for Dr. Koch's opinion, I should have been inclined to refer this species to the genus *Drassus* or *Melanophora*. A single example was found under a stone at Haifa.

MICARIA SEPTEMPUNCTATA, sp. nov. (Plate XVI. fig. 32.)

Female adult, $1\frac{1}{3}$ line.

This small but brilliant Spider may be distinguished from *Drassus* (*Micaria*) *nitens* (Bl.) = *M. pulicaria* (Westr.), which in form, colour, and structure it nearly resembles, by being smaller, and by having the white hairs on the cephalothorax (which is of the deepest black-brown colour) generally but thinly dispersed over the surface, not gathered into converging lines as in *M. pulicaria* ; some of these hairs reflect metallic tints like those on the *abdomen*, which is black and covered with scaly hairs reflecting metallic tints of gold, green, and purple. The *abdomen* has also, on the upperside, seven small but distinct white spots, formed by groups of short white squamous hairs ; two of these spots are on the fore margin, four others form a transverse row about one third of the length of the abdomen, behind the two first, and the seventh is at the hinder extremity, just above the spinners ; on either side of the fore extremity, but rather beneath it, is also a short oblique stripe of similar white hairs. The *legs*, which are not very long nor greatly different in length (but whose exact relative length I could not satisfactorily ascertain), are of a yellow colour, except the femora, which are black.

An adult female was found under stones on an old wall at Has-beiya.

Since writing the above description I find an adult male (hitherto overlooked) from a similar habitat, on the Lebanon, near Ain-Ata. In colours and markings it resembles the female, but it is rather smaller. The *palpi* are short, and of a black-brown colour ; the radial and cubital joints are of equal length, and the former has a small, pale, prominent, pointed apophysis from its outer extremity ; the digital joint is narrow, no broader than the radial, but equal to that and the cubital together in length ; the palpal organs are prominent, but simple in structure. The *legs* of the male are also longer than those of the female ; their relative length is 4, 1, 2, 3.

MICARIA NUPTIALIS, sp. nov. (Plate XVI. fig. 33.)

Male adult, length $2\frac{1}{2}$ lines ; female adult, $2\frac{3}{4}$ to 3 lines.

This fine species has the *cephalothorax* long and narrow, and of a deep black-brown colour, clothed with greyish-white hairs, some of which are drawn into converging lines, indicating the ordinary indentations on the thoracic portion. The *eyes* are very small, and apparently of nearly equal size ; they are disposed in two transverse concentrically curved rows, the foremost row being the shortest ; the

interval between the central eyes of each row is greater than that between each and the lateral of the same row on its side, to which last it is exceedingly near, though not contiguous. The *legs* are long and rather slender; their relative length is 4, 1, 2, 3 in the male (but not in the female); and those of the fourth pair are much the longest; they are furnished with hairs and (those of the third and fourth pairs) a few small spines; the colour of the first and second pairs is yellow, with blackish-brown femora, that of the third and fourth pairs dark yellow-brown, deepening to black-brown on the femora. The *palpi* are long, and of a deep blackish-brown colour; the cubital, radial, and digital joints are long and of nearly equal length; the radial joint is perhaps slightly longer than the cubital, and has a rather strong and prominent apophysis, with a sharp and slightly curved point; the palpal organs are simple, and have a very small but strongly curved reddish spine at their fore extremity, near which is another small corneous process. The *fulces* are long and strong, a little prominent at their base in front, and inclined backwards towards the *maxillæ*; these last are unusually prominent or gibbous at their base, but otherwise of normal structure. These parts, with the *labium* and *sternum* (which latter is heart-shaped), are similar to the cephalothorax in colour; but the *maxillæ* are tipped with yellowish. The *abdomen* is of a narrow elongate-oval form, strongly constricted transversely at the middle of the upperside; its colour is jet-black, clothed sparingly with squamous hairs, which emit green and purplish metallic tints; a small spot of brilliant white hairs is on either side near the fore margin; and also on either side, in the transverse constriction, is a white stripe of the same nature, running over to the underside. The *female* resembles the male; but the abdomen has no transverse constriction, and the spots on the fore margin are in this sex strong stripes; the stripes at the middle are also stronger than in the male.

An adult male and female of this handsome and very active Spider were found under stones at Hebron, and another adult female in a similar situation near Jericho.

MICARIA ALBIMANA, sp. nov. (Plate XVI. fig. 34.)

Female adult, length $2\frac{1}{4}$ lines.

This species is allied to *M. nuptialis*, which it resembles in form, general structure, and colours; but it may be readily distinguished by its yellow-brown cephalothorax and other fore parts; the palpi also have the humeral joints blackish, but the rest is of a clear pale yellowish white; the legs are likewise paler than those of *M. nuptialis*; and the sternum is clothed with coarsish grey hairs. The abdomen is black, but richer and more metallic in its tints; a stripe (which is interrupted in the middle) formed by pure white hairs encircles the fore margin; a transverse row of five strong spots or markings runs over the sides and upperside at about the middle; and there is a small white spot just above the spinners; the underside is paler than the upper, and has a short longitudinal tapering white stripe about the middle; the genital aperture is rather large, and somewhat of a

T-shape; from indications in the only example found it seems probable that in some examples the two lateral spots of the middle abdominal row would be found to become confluent, and so form a continuous stripe.

A single adult female was found under a stone at Nain.

Genus PHRUROLITHUS (Koch).

PHRUROLITHUS FLAVIPES, sp. nov. (Plate XVI. fig. 35.)

Female adult, length $1\frac{1}{2}$ line.

In general form and structure this species is of the usual type, but may be easily distinguished by its colours and markings. The *cephalothorax* is of a brownish-yellow colour, marked and streaked obscurely with brown, and clothed with greyish-white hairs, some of which are disposed in converging lines on the sides. The *eyes* are in two transverse and very nearly straight rows, well separated from each other; the front row, when looked at from the front, curves a little upwards; the interval between those of the hind central pair is slightly greater than that between each and the lateral of the same row on its side; each of those of the fore central pair is contiguous to the fore lateral on its side. The *legs* are moderately long and strong, their relative length 4, 1, 2, 3; those of the fourth pair considerably exceed in length those of the first pair; they are of a brightish yellow colour, with the femora darker; those of the first and second pairs are nearly black. A double longitudinal series of long and rather strong sessile spines occupies the undersides of the tibiae and metatarsi of these two pairs.

The *falces*, *labium*, and *maxillae* are yellowish, clouded with dusky black; and the *sternum* is of a blackish-brown colour.

The *abdomen* is oval, and of moderate size and convexity; its colour is black, with four yellowish-white spots forming a large quadrangular figure on the fore half of its upperside; the foremost side of this figure is shorter than the hinder one, following, in fact, the width of the abdomen at those two points.

An adult female was found at Hasbeiya, under stones, on an old wall, and another in a similar situation on Mount Lebanon.

Genus CLUBIONA (Latr.).

CLUBIONA STRAMINEA, sp. nov. (Plate XVI. fig. 38.)

Male adult, length rather more than $2\frac{1}{2}$ lines.

This Spider is entirely of a straw-yellow colour, the *cephalothorax*, however, being tinged with dusky reddish; and the abdomen has a space along the middle of the fore half of the upperside of a brighter yellow than the rest; the extremity also near the spinners is slightly suffused with red-brown. In general form and structure this species approaches *Clubiona deinognatha* (Cambr.) = *C. phragmitis* (Koch). The *eyes* are rather large, but not very different in their relative size, and are in the ordinary position; the foremost row is placed immediately above the *falces*, almost on the margin of

the clypeus, and is straight; but the hinder row is a little curved; the two centrals of this row are nearer together than each is to the lateral of the same row on its side, while the hind centrals are further from each other than each is from the lateral on its side; the eyes of each lateral pair are placed in a strongly oblique line, and the interval between them exceeds one half an eye's diameter.

The *legs* are moderately long, and not very strong; they are sparingly clothed with hairs and spines.

The *palpi* are rather slender and moderately long; the humeral joints have two short, strong, black bristles near their fore extremity; the cubital is longer than the radial joint, and has a long black bristle issuing from its fore extremity; the latter joint has two longer black bristles on its inner side; and at its outer extremity there is a small blunt pointed apophysis, with a small red-brown corneous prominence at its base on the underside; the digital joint is small, and of an oblong-oval form; the palpal organs are simple, and not very prominent, though well developed. The *falces* are long, strong, and projecting; their profile is slightly arched, and they are broadly but not deeply excavated near their inner extremities; their colour is a dark reddish yellow-brown.

The *abdomen* is of a long-oval form, pointed behind; its colour is yellow, very sparingly clothed with greyish-yellow hairs; it has the normal narrow elongate marking along the centre of its fore half very indistinctly visible, being only of a little clearer and darker yellow than the rest; four dusky-yellow impressed spots form nearly a square (the fore side being slightly the shortest) not far from the middle of the upperside. The spinners are prominent, but of moderate length and strength, those of the inferior pair being longer and stronger than those of the superior.

A single adult male was found among the low plants near Elisha's Well, on the plains of the Jordan.

CLUBIONA GILVA, sp. nov. (Plate XVI. fig. 39.)

Female adult, length 3 lines.

This Spider might be taken for the female of *C. straminea*; but the *eyes* are smaller, and are disposed in two longer and more nearly parallel lines, the fore one of which is not quite so near to the margin of the clypeus as in that species: their relative positions, however, are the same; but the interval between those of each lateral pair equals, if it does not exceed, the diameter of the largest of them. The *falces* are stronger and more arched in profile; they are also without any excavation on their inner sides at the extremities (but this may be only a sexual character), and are of a deep reddish yellow-brown colour; in other respects this species is similar in colour to *C. straminea*, but the abdomen has a few small prominent black bristles on its upperside at and near the fore extremity. The *maxillæ* and *labium* are of the ordinary form, the latter is slightly emarginate at its apex (as also is that of *C. straminea*); the genital aperture is very small, and very similar in form to that of *C. phragmitis* (Koch), to which, perhaps, this Spider is still more nearly allied than to *C. stra-*

minea; it differs, however, from the former remarkably in colours, no example, out of the numerous examples of *C. phragmitis* that I have seen, having the pale unicolorous abdomen of the present species.

A single adult female among water-weeds, near Elisha's Well, Jericho.

CLUBIONA CONTAMINATA, sp. nov. (Plate XVI. fig. 40.)

Female adult, length $2\frac{1}{2}$ lines.

This species is nearly allied to the foregoing, but is smaller; and the cephalothorax is more depressed; it is of a bright brownish-yellow colour, a little darker in front, and with a narrow pale margin. The *eyes* are small, but not greatly different in size, and are in the ordinary position; those of the front row (which is much shorter than the hinder row) are equally separated from each other; those of the hind central pair are considerably further from each other than each is from the lateral of the same row on its side. The *legs* are not very long, except those of the fourth pair, which are considerably the longest; their relative length appeared to be 4, 1, 2, 3; but of this I am not certain, owing to a difficulty in the actual measurement. The *palpi* are short and, with the *legs*, are yellow, the latter being furnished with hairs and spines. The *falces* are strong, but not very long; they are nearly vertical and very prominent towards their base in front, where they have numerous black bristles. The *maxillæ* appeared to be much more enlarged than usual near their extremities on the outer side, where they are of a bluntish angular form; in other respects they are quite normal. The *labium* is oblong, and rather rounded at the apex. The colour of the *falces* is deep reddish yellow-brown; that of the *maxillæ* and *labium* paler; and the *sternum* is yellow. The abdomen is oval, and of a pale yellow colour; about the middle of the upperside is an elongate dark red-brown stripe, indicating the hinder portion of the usual median stripe on the fore side; on the sides of and behind this stripe are numerous short dark red-brown markings and *striæ*; these are most frequent on the sides near the spinners. The genital aperture consists of a very small and somewhat horseshoe-shaped opening, above which are two deep-blackish red-brown spots or markings in a transverse line.

Two adult females were found among weeds on the banks of the stream flowing from Elisha's Well, near Jericho.

CLUBIONA ACCENTUATA (Walck.), *Ins. Apt. tom. i. p. 594.*

An adult female of this species was found at Jerusalem.

Genus CHEIRACANTHIUM (Koch).

CHEIRACANTHIUM ANNULIPES, sp. nov. (Plate XVI. fig. 36.)

Female adult, length nearly 3 lines.

This Spider is of the ordinary form and structure, but may be easily distinguished by its colours and markings. The *cephalothorax* is

yellow, furnished thinly with greyish-yellow hairs. The *eyes* are in two transverse rows; the fore one is straight, and nearly an eye's diameter from the margin of the clypeus; those of the hind central pair are nearer to each other than each is to the lateral of the same row on its side; those of the front row appeared to be equidistant from each other; the four central eyes form a square, and those of each lateral pair are placed obliquely, and are contiguous to each other. The *legs* are moderately long, and not very strong; their relative length 1, 4, 3, 2; their colour is yellow, with a broken red-brown annulus at each joint, and they are furnished very sparingly with hairs and a few short spines. The *palpi* are short, and, with the maxillæ, are yellow. The *labium* is dark blackish brown, with a yellow margin. The *sternum* is yellow, with a marginal row of largish and nearly confluent deep-blackish red-brown spots or blotches.

The *abdomen* is oval, and very convex above; it is of a dull dusky yellowish colour, thickly spotted with whitish-yellow cretaceous-looking spots, upon which are numerous black spots and markings, both on the upper- and underside; the normal elongate longitudinal marking in the middle of the fore part is of a barbed form; the other black markings form, on the hinder half, two longitudinal lines of strong spots, which converge as they approach the spinners, while those on the sides form irregular oblique line. The *falces* are long, strong, and straight, and a little projecting.

Three females (adult and immature) were found among low-growing prickly plants on the waste between Mount Tabor and Nazareth.

CHEIRACANTHIUM TENUISSIMUM, L. Koch, Die Arachn. Fam. der Drassid. p. 237, pl. ix. fig. 154.

An adult male of this species was found at Hebron, another at Jerusalem, and an adult female on the road from the latter city to Nazareth.

CHEIRACANTHIUM SEIDLITZII, L. Koch, Die Arachn. Fam. der Drassid. p. 264, pl. x. figs. 169-171.

An adult female at Beirût.

CHEIRACANTHIUM MILDEI, L. Koch, Die Arachn. Fam. der Drassid. p. 253, pl. x. figs. 161-163.

An adult male of this very distinct species was found on low-growing plants on the plains of the Jordan, and another afterwards at Corfu.

CHEIRACANTHIUM ANCEPS, sp. nov. (Plate XVI. fig. 37.)

Female adult, length 3 to $3\frac{1}{2}$ lines.

The general form and structure of this species is of the ordinary type. The whole of the fore part (except the *falces*, which are long, strong, and straight, a little prominent, and of a yellow-brown colour) is dull yellow, furnished with yellowish hairs. The *eyes* are small,

not very unequal in size, and margined with black; they are in two transverse rows, the hinder one of which is curved away from the front row; the eyes of this last (which is a little the shortest) are equidistant from each other, as are also those of the hinder row; those of each lateral pair are near to each other, but not quite contiguous. The *legs* are long and rather slender (their relative length 1, 4, 2, 3), and they are furnished with hairs and a very few spines; these last are chiefly on the legs of the third and fourth pairs. The *palpi* are rather long and slender. The *maxillæ* and *labium* are of a light yellow-brown colour. The *abdomen* is oval, and projects considerably over the base of the cephalothorax; it is of a dull yellow-brown colour, clothed with yellow-grey hairs, and mottled thickly with clearer yellow cretaceous-looking spots; these are brightest and most conspicuous in the immediate vicinity of the normal elongate longitudinal marking on the fore half of the upperside, this marking, of a dark dull brown colour and well defined, having a bold sub-angular prominent point at its middle on either side, and a smaller one between that and its fore extremity; its hinder extremity ends in a point. On the underside the cretaceous spots are thick and conspicuous. Probably in life the abdomen was of a greenish hue; but of this I have no certain recollection.

In two other examples, which Dr. Koch considers to be of the same species, the abdomen was of a clearer bright yellow (in the cabinet specimens), and, except a few near the normal elongate marking on the fore part of the upperside, there were no cretaceous spots either above or below; and this normal marking was paler and less well defined. Perhaps the cretaceous spots are dependent on age and the consequent cracking as it were of the epidermis after the deposition of ova.

CHEIRACANTHIUM PELASGICUM, Koch, Die Arachn. Fam. der Drassid. p. 243, pl. x. fig. 156.

Adults of both sexes of this fine and handsome Spider, which is allied to *C. nutrix*, but very distinct, were found on low-growing plants at Jerusalem.

Genus TRACHELAS (L. Koch).

TRACHELAS MINOR, sp. nov. (Plate XVI. fig. 41.)

Female adult, length not quite $1\frac{1}{2}$ line.

Cephalothorax oval, with the profile-line of the caput and thorax level; but the caput is well defined by the ordinary oblique lateral indentation; it is of a bright yellowish-red colour, very sparingly clothed with hairs; the whole is thickly covered with minute impressed dots or punctures; and the hind slope is rather abrupt. The *eyes* are rather large, but not very different in their relative size; they are in two very nearly concentrically curved transverse rows (the fore one of which is the shortest), and close to each other, but not contiguous; the interval between those of the fore central pair is greater than that between each and the fore lateral on its side, with

which it is very nearly contiguous; the fore centrals are only an eye's diameter from the margin of the clypeus; the hind centrals are further from each other than each is from the hind lateral on its side; and there is a roundish black patch immediately below and contiguous to the fore central eyes. The *legs* are short and moderately strong; their relative length 4, 1, 2, 3, and their colour a clear pale yellow; they are furnished sparingly with hairs, but are quite destitute of spines. The *palpi* are short, and similar in colour to the legs. The *falces* are short, strong, and a little inclined backwards, and similar to the cephalothorax in colour. The *maxillæ* are of a yellow-brown colour, the extreme margin being pale; they are strong, of nearly oblong form, slightly broadest at the extremities, which are a very little rounded, and rather inclined to the *labium*. This part is large, much the broadest at its base, and the sides rather rounding to the apex, which is truncate; its colour is dark yellow-brown, and the apex pale yellowish. The *sternum* is heart-shaped, of a reddish-yellow colour, and, like the cephalothorax, covered with punctures. The *abdomen* is of oval shape, considerably convex above, and projects over the base of the cephalothorax; it is of a pale yellow hue, the upperside more or less suffused above with purplish or maroon-brown, principally on the hinder part, where, in the central line near the spinners, are several indistinct yellowish angular lines or chevrons. The genital aperture is characteristic.

An adult female was found under a stone at Jericho; one was also received subsequently from France. Figure 41, *a, b*, Plate XVI. represents the male palpus, drawn by Dr. Koch from a French example, of which, not having seen it, I am unable to give any description.

Genus HECAËRGE (Bl.).

HECAËRGE MACULATA, sp. nov.

Female immature, length 3 lines.

The whole of this Spider (which is of the ordinary form and structure) is of a yellowish colour, the abdomen being of rather a duller hue than the rest; the upper surface (including the legs also) is thinly spotted and marked with small dull brown spots and markings. The *eyes* are in two transverse curved rows, the hinder one being rather the longest, and the curves directed forwards; the hinder row is more strongly curved than the other, so that the interval between the two lateral eyes on either side is greater than that between each hind central eye and the fore central opposite to it. The eyes of the fore central pair are the smallest of the eight, and are slightly further from each other than each is from the lateral on its side; and the interval between the hind centrals is less than that between each and the hind lateral on its side. The legs are moderately long and strong, their relative length 4, 1, 2, 3; the tarsi and metatarsi of each of those of the first and second pairs have on their undersides two longitudinal parallel rows of long, strong, sessile spines; and each tarsus has a small compact tuft of sooty-coloured hairs at its extremity, beneath two curved black claws. It is possible that with adult

examples the spots and markings on this Spider may form a regular pattern, perhaps very similar to that of *Hecaërge spinimana*.

Two immature examples were found near Beirût, and another on the plains of the Jordan.

HECAËRGE ? OPINIOSA, sp. nov. (Plate XVI. fig. 43.)

Female adult, length $2\frac{3}{4}$ lines.

The *cephalothorax* is of a short oval form, constricted laterally at the caput; its profile slopes gradually from the commencement of the hind slope to the eyes. The normal grooves and indentations are tolerably distinct; and the hind slope is abrupt and broadly impressed. The colour of the whole of the fore part of this Spider is yellow. The *eyes* are on black spots, in two transverse very slightly curved rows, near to each other, and the curves directed backwards. The interval between the eyes of the central pair of each row is greater than that between each and the lateral of the same row nearest to it; each central eye is, in fact, contiguous to the lateral next to it; the eyes of each lateral pair are close to each other, very nearly but not quite contiguous. The *legs* are moderately long and not very strong, their relative length 1, 2, 3 (those of the fourth pair were wanting); the tibiæ and metatarsi of the first and second pairs have a double longitudinal series of long sessile spines beneath them; each tarsus ends with two slender curved claws. The *falces* are moderately long and strong, a little divergent near their extremities, and their profile-line a little arched. The *maxillæ* are rather strong, straight, but inclined to the labium, and a little enlarged on their outer extremities. The labium is short and broad, rather narrower and somewhat rounded at the apex. The sternum is short, heart-shaped, and indented between the basal joints of the legs. The *abdomen* is of an elongate-oval form, and its colour is a dull whitish drab-yellow, without any markings either above or beneath. The genital aperture is narrow, chiefly marked by a transverse black-brown line of the following form, .

A single example was found on the Lebanon. I have included this Spider doubtfully in the genus *Hecaërge*. It appears to be certainly a Drasside; and its general appearance, as well as the spines beneath the tibiæ and metatarsi of the first two pairs of legs, and the maxillæ, seem to connect it with *Hecaërge*; but the position of the eyes is somewhat different, and indicates a nearer approach to *Drassus*.

Genus *AGRÆCA* (Koch).

AGRÆCA LYCOSIFORMIS, sp. nov. (Plate XVI. fig. 42.)

Male adult, length $3\frac{3}{4}$ lines; female adult, $4\frac{1}{2}$ lines.

The *cephalothorax* is oval, much broader behind than before, where it is roundly truncated, and almost devoid of any lateral constriction; the profile line of the caput and thorax is almost uniformly level; and the normal grooves and indentations are indicated by short dark lines. It is of a dull yellow colour, clothed with paler hairs, and has two broad longitudinal dark brown bands, one on either side

of the central line; these bands run the whole length of the cephalothorax, leaving two broad yellow marginal bands, and a still broader central one which has at its fore extremity two short, fine, dark brown lines originating at the two hind central eyes, running backwards for a little way, and converging into one. The normal indentation which indicates the central junction of the caput and thorax is shown by a fine, longitudinal, bright, red brown line; this line is sometimes produced forwards and so meets the two above-mentioned converging lines.

The *eyes* are nearly equal in size, and are in two transverse rows; the front row is straight, and the curve of the hinder row is directed backwards; the eyes of each lateral pair are a little obliquely placed, and are contiguous to each other; those of the front row, which is the shortest, are about equidistant from each other, and are apparently smaller than those of the hinder row, of which the centrals are slightly nearer to each other than each is to the lateral on its side; the height of the clypeus is about equal to the diameter of one of the fore central eyes. The *legs* and *palpi* are a little deeper-coloured than the cephalothorax; the former are long and strong; their relative length 4, 1, 2, 3, and are furnished with hairs, bristles, and spines; each tarsus has a kind of scopula beneath its whole length, and terminates with two curved claws, beneath which is a strongish tuft of hairs.

The *palpi* are moderately long and strong; the humeral joint is enlarged gradually at its fore extremity, near which on the upper-side it is encircled by a series of fine black spines, each end of the series being a small compact group of several black bristles: the cubital and radial joints are about equal in length; the latter is the least strong, and has numerous long bristly hairs, mostly on the underside, and it is produced at its extremity on the outer side into a short, bent, pointed, prominent, red-brown, corneous apophysis; the digital joint is large, of an oval form, and pointed at its extremity: the palpal organs are well developed and not very complex; they consist of one or two corneous lobes, from the hinder one of which towards the inner side a red-brown spine issues and curves round backwards beneath the base of the radial joint, and so round the outer margin of the digital joint, terminating near its fore extremity in a fine filiform point. The *falces* are of ordinary form and strength. The *maxillæ* are moderately long and strong; they are somewhat oblong, rounded at their extremities on the outer side, and slightly inclined to the *labium*, which is short, broad, and nearly quadrate; these parts, with the *sternum*, are similar to the cephalothorax in colour, the falces being a little darker.

The *abdomen* is of a long-oval form, and of a paler yellow than the cephalothorax; it has on its upperside two longitudinal converging brown-black bands, which appear like the continuation of the bands on the cephalothorax; near their hinder portion these two (abdominal) bands are charged with a short longitudinal series of nearly confluent and not very distinct yellowish spots; they are, however, sufficiently distinct to be a characteristic

feature; the inner edge of each band is clean and well defined, but the outer one is ragged and joins in with spots and markings on the sides; these spots are sometimes arranged in somewhat oblique lines which run backwards; within the central space left by the two longitudinal bands is a longish tapering figure defined by two blackish lines which converge to a point as they run backwards from the fore margin of the abdomen; this tapering figure is very similar to the marking found in a similar situation almost invariably in the genus *Lycosa* and in many other Spiders: the underside of the abdomen has three longitudinal broken lines of black spots—one line along the centre and a marginal one on either side. The spinners are not very long; those of the superior pair have two joints, the extreme joint bent downwards; those of the inferior pair are the strongest, and are nearly as long as the former, and of a darker colour.

The *female* resembles the male in colour and markings; the genital aperture is very small and nearly circular in form.

Adults of both sexes, as well as immature examples, were found among water-weeds on the banks of the stream leading from Elisha's Well, near Jericho. It is a very active Spider; and in its manner of running, in its form and general appearance, and in the pattern on the cephalothorax and abdomen it bears a striking resemblance to many Spiders of the genus *Lycosa*.

Fam. PALPIMANIDES.

Genus PALPIMANUS (Dufour).

PALPIMANUS HÆMATINUS, Koch, Die Arachn. iii. p. 21, pl. 80. figs. 178, 179.

Adults of both sexes, as well as immature examples, were found not unfrequently under stones on the plains of the Jordan near Jericho. The spinners of this Spider are but two in number.

Fam. DICTYNIDES.

Genus ERESUS (Walck.).

ERESUS ACANTHOPHILUS, Duf. An. Sc. Phys. tom. vi. p. 14, pl. 95. figs. 3, 4.

Adult and immature examples of both sexes of this fine Spider were abundant in their tubular cornucopia-like webs at various places in Palestine; these webs were usually spun firmly into some thick and thorny plant. The systematic position of the genus *Eresus* has been the occasion of some difference of opinion among araneologists; for myself, I cannot perceive any close affinity in the Spiders which compose it to the Salticidae with which it has usually been placed. As it appears to me, there are strong family affinities between it and *Dictyna*, both in general form and structure and mode of life, besides the possession by each of a calamistrum on the metatarsi of the fourth pair of legs and a supernumerary maxillary organ, though

the mere possession of these would not necessarily bring them into juxtaposition with each other. *Eresus* and *Dictyna* seem to me to connect the Agelenides and Drassides through *Palpimanus* and *Stenochilus* (Cambr.).

ERESUS MÖERENS, Koch, Die Arachn. xiii. p. 3, pl. 433. fig. 1078.

A single adult female was found near Jericho.

ERESUS RUFICAPILLUS, Koch, Die Arachn. xiii. p. 4, pl. 433. fig. 1080.

Adult and immature females were found also near Jericho.

Genus *Dictyna* (Sundeval).

Dictyna BENIGNA, Bl. Brit. & Ir. Spid. p. 146, pl. ix. fig. 93.

A single adult female was found on low plants on the Lebanon.

Dictyna VARIABILIS, Koch, Die Arachn. iii. p. 29, pl. 83. fig. 187.

A single adult female of this species was found at Hebron.

Dictyna CONSECUTA, sp. nov.

Male adult, length 1 line.

This species, although smaller and differing a little in colours and markings from *D. uncinata* (Westr.), yet resembles it so nearly as to be distinguished readily only by the structure of the palpi and palpal organs. The spur at the base on the upperside of the radial joints of the *palpi* is *slightly curved and directed forwards*; in *D. uncinata* it is *straight and nearly vertical*; the digital joint is large; and the palpal organs have a strong rather circular corneous lobe near their base on the inner side, from which springs a strong black spine which completely surrounds the palpal organs in its wide and sweeping coil. The markings of the *female* are more distinct than those of the male, and give a good distinguishing character from *D. uncinata*: the central longitudinal dark marking on the fore part of the upperside of the abdomen is *distinctly trifid* at its hinder extremity; and the brown angulated lines or bars which succeed this are rather indistinct, but are terminated at either extremity by a bold and distinct black patch or spot. The female has a calamistrum on the metatarsus of each leg of the fourth pair, and also a supernumerary spinning-organ; the adult male has only the latter.

An adult male was found on low-growing plants at Jerusalem, and another near Damascus; the adult female alluded to was found in a similar situation on the plains of the Jordan.

Dictyna PUTA, sp. nov.

Male and female (immature), length 1 line.

In form and structure this species is similar to the last, *D. consecuta*. The *cephalothorax* is dark brown; the legs and palpi yellowish brown with a slight olive tinge; the tarsi and metatarsi of the former are pale yellowish, with a brown annulus at their extremities.

The *abdomen* is jet-black, and the whole Spider more or less thickly clothed with whitish-grey hairs; these are mostly coarse, and some of them are somewhat squamose in character. The most specially distinctive specific characters of the male, such as the form of the *falces* and the structure of the *palpi*, could not be observed, owing to the immature condition of the specimen. The female possessed *calamistra* and an *inframamillary* organ.

An example of each sex was found on low plants at Jerusalem.

Dictyna innocens, sp. nov.

Female adult, length $1\frac{3}{4}$ line.

Closely allied to *D. consecuta*, this species is larger and perhaps more nearly allied to *D. benigna* (Bl.), from which, however, it may be distinguished by its generally paler colour (having a pale yellowish ground-colour clothed with hoary pubescence) and the much greater minuteness and distinctness of the pattern on the upperside of the abdomen; the longitudinal oblong marking on the fore half is narrow and somewhat cruciform behind, resembling nearly in this respect *D. consecuta*; in some examples this marking is almost obsolete; the succeeding angular bars are black-brown, strong, and often more or less confluent, forming an almost homogeneous patch in some examples; the sides are thickly marked with black-brown; and the underside has a broad, longitudinal, central band of the same colour. The *legs* are short, of a yellowish colour, clothed with hoary hairs, and annulated with reddish brown. It has *calamistra* in the usual position, and an *inframamillary* organ.

Examples (all females) were found on low-growing plants on the plains of the Jordan.

Fam. AGELENIDES.

Genus AMAUROBIUS (Koch).

AMAUROBIUS PUTUS, Cambr. Zool. 1863, p. 8570.

Adult females of this Spider (which I cannot distinguish from *A. putus* = *Ciniflo puta*, Cambr.) were found on low plants on the plains of the Jordan. It is, I believe, identical with *Lethia stigmatisata* (Menge). I cannot at present distinguish the genus *Lethia* (Menge) by any good generic characters from *Ciniflo* (Bl.). The name *Amaurobius* (Koch) is adopted as being prior to that of *Ciniflo* conferred by Mr. Blackwall.

AMAUROBIUS SIMPLEX, sp. nov.

Male immature, length $2\frac{1}{4}$ lines.

In general form and structure this Spider is like the typical species of the genus. The whole Spider is of a general dark sooty-black colour, the cephalothorax and *falces* being more or less strongly tinged with deep brown; the height of the clypeus is less than half that of the facial space. The *eyes* are not large, nor very unequal in size; the four centrals form nearly a square whose fore side is the shortest; the interval between those of the fore central pair is less

than that between each and the fore lateral on its side, but equal to that between the eyes of each lateral pair respectively; the eyes also of the hind central pair are nearer to each other than each is to the hind lateral on its side. The *legs* are paler than the rest, having somewhat of a greenish yellow-brown hue, the tarsi being much the palest. The *palpi* are short and strong; the radial joint (though, being immature, it was not fully developed, having apparently one more change of integument to undergo) was large and very spreading in front, showing symptoms of a strong but undeveloped prominence at its fore extremity rather on the inner side; the digital joint is very large and of a broad oval form; the palpal bulb was very large, prominent, and tumid.

An immature female resembled the male, and possessed calamistra and a supernumerary spinning-organ; the male had the latter but not the former. I have never observed the former on the metatarsi of any adult male examples of those species of Spiders of which the females, whether adult or immature, invariably possess them; but I have occasionally seen them on immature males of one or two species.

Two males and one female (all immature) were found at Jerusalem among the débris of an old wall.

AMAUROBIUS DISTINCTUS, sp. nov.

Male adult, length $2\frac{3}{4}$ lines; female adult $3\frac{1}{4}$.

This remarkably distinct species, although closely allied to *A. simplex*, may be at once distinguished by two longitudinal rows of pure white spots on the upperside of the abdomen, the ground-colour of which is jet-black; these rows consist each of 5-6 spots, and they converge towards each other a little as they approach the spinners; the four foremost of the spots are the largest and occupy the fore half of the upperside of the abdomen, forming a large and nearly square area; the spots which succeed are smaller, and diminish gradually in size towards the spinners. The *cephalothorax* is of a dull yellow-brown colour, narrowly margined with black. The *eyes* are very similarly situated to those of *A. simplex*, but those of the lateral pairs are rather nearer to each other. The *legs* are moderately long and strong, and are furnished with hairs and a few spines, of which latter the chief consist of a row beneath the metatarsi of the first pair, short and tooth-like; the colour of the legs is a dull brownish yellow deepening at the extremities of the joints, and thus giving them a kind of indistinctly annulate look. The *falces* are rather long, strong, similar to the cephalothorax in colour, slightly hollowed on their inner sides, and impressed near their extremities in front. The males of this species have a supernumerary spinning-organ but no calamistra; the females have both.

The *palpi* are short, strong, and similar in colour to the legs; the radial joint has some strong irregular prominences at its fore extremity; and the digital, which is large and of a somewhat oblong-oval form, has a strong, rather angular, sharp-pointed prominence at its base on the outer side; the palpal organs are highly developed and

prominent, having some large and variously formed corneous processes connected with them.

Several examples of both sexes, but the males immature, were found beneath stones and among débris of various kinds on the plains of the Jordan. In similar situations I also found examples of both sexes, both adult and immature, at Alexandria (Egypt) in 1864.

AMAUROBIUS INDISTINCTUS, sp. nov.

Female adult, length nearly $2\frac{1}{4}$ lines.

The whole of the fore part of this Spider, both above and below, is of a yellow colour, the legs and palpi being rather paler than the cephalothorax. The *legs* are neither very long nor strong; they are furnished with hairs, long bristles, and a few longish fine spines, and have calamistra on the metatarsi of the fourth pair. The *eyes* are nearly equal in size, and are more closely grouped than in either of the foregoing species; those of the foremost row are nearly equidistant from each other, the space between the two centrals being rather greater than that between each and the lateral next to it; those of the hinder row are also relatively in a similar position; those of each lateral pair are near together but not contiguous; and the four central eyes form very nearly a square. The *falces* are moderately long, strong, and considerably and roundly prominent near their base in front. The *abdomen* is oval, more than usually convex above, and bluff and rounded behind; its fore part projects over the spinners, the supernumerary one of which is apparently undivided; the colour of the abdomen is a pale yellowish whitey-brown, with a row of paler and rather oblique, short, strong, but indistinct bars along its upperside.

This obscure Spider appears to belong to the genus *Amaurobius*, though in some respects it is of rather abnormal character; it was found underneath a stone near Jericho.

AMAUROBIUS RUFICEPS, sp. nov.

Male adult, length $2\frac{1}{2}$ lines.

This Spider may be at once distinguished from its near allies (*A. simplex* and *A. distinctus*) by the colour of the cephalothorax, which is a bright yellowish red, the femora of the first two pairs of legs being also strongly tinged with the same; the remainder of the legs, as also the *falces* (which are prominent at their base in front), the *maxillæ*, *labium*, and *sternum* are of a more or less dark brown tinged with yellow; the *legs* are furnished, but not conspicuously, with hairs and fine spines; they are rather long and strong; and their relative length is 1, 4, 2, 3.

The *palpi* bear a general similarity to those of *A. distinctus*; but the radial joint has far more remarkable and irregular prominences at its extremity, and the digital joint is also larger and of a different form; it differs likewise in the structure of the palpal organs.

The abdomen is dull black with a silky hue. An inframaxillary organ is present, but no calamistra.

A single adult male was found under a stone near Cana-el-Jelil.

Genus LACHESIS (Savign.).

LACHESIS PERVERSA, Savign. Arachn. d'Egypte, pl. i. fig. 4.

An adult female of this species was found under a stone on the Lebanon near Ain-Ata.

LACHESIS MEADII, sp. nov. (Plate XIII. fig. 4.)

Male adult, length $2\frac{1}{2}$ lines; female adult, 3 lines.

Cephalothorax oval, with no lateral constriction forwards, where it is bluff and rounded; the normal grooves and indentations are obsolete, except a very faint one in the middle line of the thoracic region; the caput and thorax are confluent, rounded, and arched; its colour is a deep rich, almost chocolate-, red-brown; its surface is destitute of hairs, and has a somewhat coriaceous appearance. The clypeus exceeds in height double the length of the space occupied by the two central pairs of eyes.

The *eyes* are in two strongly curved transverse and almost parallel rows, of which the curves are directed backwards; the front row is the shortest and least curved. The eyes are small and do not differ much in size; those of the two central pairs form a quadrangular figure whose fore side is the shortest; the interval between the eyes of each of these pairs is much less than that between each central eye and the lateral of the same row nearest to it; and the intervals between those of each lateral pair are about equal to that between those of the fore central pair.

The *legs* are moderate in length and strength, and their colour is orange-brown, the femora tinged with darker brown; they are furnished sparingly with fine hairs and dark spines; each tarsus ends with three claws, of which the two superior ones are strong, curved, and pectinated, the inferior one small and much inflected at its base.

The *palpi* are short, and similar in colour and armature to the legs, except the radial joint, which is of a deep rich red-brown colour, and the digital, which is of a dark yellow-brown; the radial is stronger than the cubital, and has its fore extremity on the upper-side produced into a long, strong, curved, blunt-pointed apophysis, which adheres closely to the side of the digital joint, the latter having the appearance of being indented so as to receive the apophysis, which curves downwards and rather backwards over the palpal organs; the digital joints are large, and their exterior sides are directed inwards towards each other; and besides the above-mentioned apophysis, the radial joint appears to have another short obtuse one on its under-side; the palpal organs are highly developed and complex, with various corneous lobes, spines, and processes, of a red-brown and black colour.

The *falces* are moderately long, strong, and conical, and a little inclined backwards; they are similar in colour to the cephalothorax, and are furnished with numerous bristly hairs near their inner extremities; the fang is small, and its point has a somewhat backward direction. The *maxillæ* are strong and curved over the labium, which they nearly enclose; their colour is red-brown tipped with

yellowish white. The *labium* is oblong, rounded at the apex, which is of a whitish colour, the remainder being red-brown. The *sternum* is heart-shaped and of a dark yellow-brown colour.

The *abdomen* (of the female) is oval, of a dull black colour, and very sparingly furnished with hairs; on the upperside are three pairs of yellowish-white, longish oval, oblique spots of different sizes in a longitudinal series in the middle line, giving the appearance of broken chevrons; these are succeeded by a crescent-shaped transverse patch of the same colour, and large and small somewhat triangular patches and an oval one, all arranged longitudinally in the centre line, the oval spot being immediately above the spinners; these are rather prominent and of a pale yellowish colour, those of the inferior pair being much the longest. On the underside the abdomen has a broadish broken bar of yellowish white on either side, into the posterior part of each of which there joins in a short oblique lateral stripe of the same colour; and between these two bars is a long central longitudinal line or narrower bar. The upperside of the abdomen in the male (adult) appears to be covered with a transparent, glossy, somewhat corneous integument of a shield-nature, through which a pattern similar to that on the abdomen of the female is rather indistinctly visible; the spiracular plates are of a yellowish-brown colour; and the genital aperture is deep red-brown and of an omega-form. With these differences, the two sexes are in other respects similar.

Adults of both sexes were found under stones, but very rarely, on the plains of the Jordan near the ruins of ancient Jericho.

It did not appear to be an active Spider; and I could not detect any web or snare belonging to it, though these would probably, if they existed, have been destroyed by the lifting up of the stones. I have connected with this Spider the name of my kind friend Mr. R. H. Meade of Bradford.

LACHESIS BLACKWALLI, sp. nov. (Plate XIII. fig. 5.)

Male adult, length $7\frac{1}{2}$ lines.

Cephalothorax oval, compressed laterally at the caput; it is moderately convex above, and the profile of the caput and thorax run evenly into one line; the normal grooves and indentations are fairly defined; the caput is rounded and rather bluff in front, and slopes in a somewhat circular form to the margin of the clypeus, which is very slightly impressed and exceeds in height the length of the space occupied by the fore and hind central pairs of eyes; the colour of the cephalothorax is yellow, slightly tinged with orange-brown, and thinly clothed with short fine pale hairs.

The *eyes* are in two strongly curved transverse rows, and are placed somewhat in front of the highest part of the caput; the curves are directed backwards; and the hinder row is longer than the fore one; the eyes of the fore central pair are the largest of the eight. The relative position of all the eyes is similar to that of *L. meadii*.

The *legs* are long, strong, their relative length 4, 3, 1, 2, and of a yellow colour, the tarsi and metatarsi being strongly suffused with

red-brown; they are furnished with hairs, bristles, and numerous deep black-brown spines, some of which, especially those on the tibiæ, tarsi, and metatarsi, are long and strong. Each tarsus ends with three claws; those of the superiors strong, curved, and pectinated, and the inferior one small and much bent at its base.

The *palpi* are short and similar in colour and armature to the legs; the cubital joint is somewhat nodose, and rather stouter, though shorter, than the radial, which has a long pointed apophysis at its outer extremity; this apophysis bends sharply upwards, and is in close contact with the digital joint, almost seeming as if it were grown into the digital joint; it has also a strong angular point on its lower surface; the digital joint is large and of an oval form, bent or flattened in on the outer side, and armed with some short, strong, black spines near its extremity on the upperside; the palpal organs are well developed but simple in structure, forming a slightly prominent lobe almost divided transversely near the middle by a strong constriction.

The *falces* are large, powerful; and their colour is yellow; they are densely clothed in front with short blackish hairs; the fangs are short, recurved, not very powerful, and of a deep red-brown colour. The *maxillæ* are short, strong, and curved towards the labium; the curve of their outer margin is almost that of a circle; their colour is pale yellow; and they are furnished with strong bristly prominent black hairs. The *labium* is more than half the length of the *maxillæ*; it is of an oblong form, rather the narrowest at its apex, which is somewhat rounded; its colour is pale yellow; and it is furnished with a few dark hairs.

The *abdomen* is rather small, of a short oval form, broadest towards the hinder extremity; and its ground-colour is yellow, furnished, but not densely, with fine hairs of a pale hue; a broad transverse bar of black-brown runs round and beneath its fore margin, and from the centre of this, and at right angles to it, a narrower bar of the same colour runs backwards for about half the length of the abdomen; this bar is strongly enlarged at about the middle into an obtusely angular point on each side; these angles are succeeded by another small one on each side; and the hinder extremity of the bar is also a little enlarged and pointed, forming a somewhat diamond-shaped termination; this bar is succeeded towards the spinners by two slightly converging rows of dark black-brown spots or short transverse bars, five in each row; the first two of these are in a line with the extreme point of the longitudinal central bar; between the two second spots is a faint indication of a third; and in a line with the large angular enlargements of the central bar, on either side, is a strong irregular lateral patch of a similar colour; and this is followed on each side, backwards, by two other much smaller patches, decreasing proportionally in size; the spinners are short.

An adult *female*, though much smaller, was evidently of this species, and had the lateral markings on the abdomen longer, as well as the inferior spinners of much greater length.

A single adult male of this fine and striking species, upon which

I have conferred, with great pleasure, the name of our veteran araneologist Mr. Blackwall, was found under a stone at Jerusalem, and a female, in a tubular silky web, among the loose broken earth of an old bank near Beirût ; it is not certain whether the web belonged to this Spider, or whether it might not have been an appropriation of the labours of some other Spider.

PALÆSTINA, nov. gen.

Characters of the genus.

Cephalothorax oblong, slightly constricted laterally forwards, moderately convex above ; caput large, uniformly convex and rounded, without any impression of the clypeus. Normal grooves and indentations almost obsolete.

Eyes eight, not very unequal in size ; in two transverse slightly curved rows not far removed from each other.

Falces short, strong, straight, and conical. Fang short and small.

Maxillæ rather long and strong, especially at the base ; slightly enlarged at the extremities, inclined towards the labium, and slightly impressed transversely about the middle.

Labium somewhat oblong, and rather narrower at the apex than at the base.

Legs not very long or strong, nor very different in their relative length, which is 4, 1, 2, 3 ; terminal tarsal claws three.

Abdomen oval, moderately convex above ; united to cephalothorax by a short but distinct cylindrical pedicle ; spinners six, those of the inferior pair largest, two-jointed, and slightly curving upwards over the abdomen.

This genus, which, after some hesitation, I have formed for the reception of several species of minute and curious Spiders, appears to connect the genera *Luchesis* and *Enyo*. The position of the eyes is decidedly different from both, while the general form and structure is very like the former.

PALÆSTINA DENTIFERA, sp. nov.

Male adult, length $1\frac{1}{4}$ line.

The cephalothorax, falces, legs, maxillæ, labium, and sternum of this species are of a bright orange yellow-red, the legs being rather the lightest-coloured. The surface of the cephalothorax is roughened by small punctures, and is very sparingly furnished with hairs. The clypeus is prominent, and its margin rounded and projecting over the base of the falces ; its height equals the length of the line formed by the foremost row of eyes ; these are in two slightly curved and almost concentric rows (the hinder row less curved than the front one) near to each other ; the centrals of the hinder row are further from each other than each is from the lateral on its side, and are the smallest of the eight, while the two fore centrals are distinctly the largest ; and all except these are pearly white ; the interval between the eyes of each lateral pair is equal to the diameter of the fore one. The legs are rather slender, and

furnished only with hairs. The *palpi* are strong and moderately long; the radial and cubital joints are about equal in length; the former is the strongest, and is enlarged and somewhat tumid on its outer extremity, from which there issues a slender spiny apophysis; this is so nearly adhering to the base of the digital joint as to make it difficult of observation: the digital (as well as the radial) joint is strongly tinged with dark blackish brown; it is large, but of ordinary form, and terminates with a slightly curved claw: the papal organs are well developed but not very complex.

The *falces* are short, strong, and furnished towards their extremities on the upper (or front) side with a small group of about five short, strongish, prominent, black, tooth-like spines.

The *abdomen* is coriaceous on the upperside, where it is of an exceedingly polished and glossy jet-black colour, and entirely destitute of hairs; a broad oblique yellowish band runs from the hinder region of each side up to the fore extremity of the abdomen, which is likewise encircled by it; the underside is of a dark chocolate-brown colour, with a broad central longitudinal pale yellow band of a somewhat elongate triangular form, which occupies its greater area; the spiracular plates are of a yellow orange-brown, and the spinners pale yellow. An adult female differed only in the less conspicuous nature of the tooth-like spines on the *falces*, and in the abdomen being strongly constricted towards its fore extremity over the upperside.

An adult male and female of this interesting little Spider were found on the surface of a piece of rock, on the plains of Jordan near Jericho. Although allied both to *Lachesis* and *Enyo*, it was impossible to include it under either of those generic appellations.

PALESTINA EXPOLITA, sp. nov. (Plate XIII. fig. 6.)

Male adult, length 1 line.

This species differs from *P. dentifera* in the colour of the cephalothorax, *falces*, sternum, labium, and maxillæ being deep brown, with a largish patch of a suffused blackish hue at the hinder point of junction between the caput and thorax; the clypeus also has on it a few strongish bristly hairs; and the lateral constriction is greater.

The *eyes* are of a more uniform size, and those of each lateral pair are rather nearer to each other; the *falces* have some similar tooth-like spines in front near their extremities, but of these in the present species there were, in most examples, no more than two at all conspicuous. The whole Spider is rather shorter than the former, principally perhaps from the abdomen projecting more over the base of the cephalothorax.

The *abdomen* is jet-black above, and equally polished and glossy above with *P. dentifera*; the upperside has the appearance of being covered by a distinct coriaceous case or shell.

The *legs* are of a yellowish-brown colour, suffused with deep black-brown: the radial and cubital joints of the *palpi* are yellow-brown in colour; and the former is produced at its outer extremity, where it has two to three small and not easily distinguishable points

or apophyses; the sides and underside of the abdomen are deep brown, paler in the central line of the underside. The female resembles the male.

This Spider, although very similar and nearly allied to *P. dentifera*, may easily be distinguished by the differential characters given above. Several examples of both sexes were found on the surface of rocks near Beirût. A single example was also met with at each of the following places:—Mount Carmel, Nain, and the Lebanon (Ain-Ata). When disturbed, it runs with exceeding swiftness over the face of the rocks, and conceals itself in the inequalities of their surface.

PALÆSTINA SEXOCULATA, sp. nov.

Female adult, length $1\frac{1}{4}$ line.

Very similar in size, form, and structure to the foregoing species, the present may be distinguished by a shorter and stouter make; the abdomen also projects more over the base of the cephalothorax; the whole of the fore part, including the legs, is of a bright orange-yellow colour tinged with red; the cephalothorax is minutely but thickly impressed with small punctures; the *abdomen* is of a short oval form and very convex above; the upperside is black and glossy, but not so polished or corneous-looking as in the two former species; the underside is pale yellow.

The *eyes* are only six in number; two large dark ones are seated transversely on a blackish patch, and form a central pair, on either side of which is another pair; these are quite small, those of each pair are placed at right angles to the line of the central pair, and are nearly contiguous to each other; the fore one of each of these lateral pairs is separated from the central eye nearest to it by about the length of its own diameter.

An adult female of this Spider was found at Jerusalem. It agrees with the typical species in all generic characters, except that of the number of the eyes: if this latter character be a permanent one of the species, it can yet, I think, in this instance have only a specific influence; possibly the number of the eyes may be accidental; instances are not unfrequent of an abnormal number of eyes in Spiders of different genera. The Spider itself is otherwise interesting, because it indicates in some respects a closer affinity to *Lachesis* than either *P. dentifera* or *P. exposita*, and in some others a closer affinity than these do to *Enyo*.

Genus *ENYO* (Savigny).

ENYO GRÆCA, Koch, Die Arachn. x. p. 83, pl. 348. fig. 811.

An adult male of this Spider was found at Nain.

ENYO LUCTUOSA, sp. nov.

Male adult, length $1\frac{1}{2}$ line.

In form and general structure this species is like *E. germanica* (Koch).

The *cephalothorax* is of a deep glossy black-brown colour, the *falces* and *sternum* being similar, but the *maxillæ* and *labium* much lighter.

The *legs* are long and slender, their relative length 4, 1, 2, 3; they are of a dull yellow colour, except the femora, which are black-brown, the tibiæ also, in some examples, being slightly suffused with the same.

The *eyes* are placed in a position similar to that of the eyes in the typical *Enyos*,—three in a short, curved, obliquely longitudinal row on either side; and transversely, between the two foremost eyes of these rows, are two other eyes; *these latter*, in the present species, are much the largest of the eight, and are further from each other than each is from the foremost eye of the other three on its side; these foremost eyes are next in size to the intermediate front ones, and each of them is nearer to the intermediate one next to it than this last is to the hindermost eye on its side, which is the smallest of the eight. The height of the clypeus considerably exceeds half the height of the facial space.

The *palpi* are short, of a deep black-brown colour, except the radial and cubital joints, which are dull yellow tinged with reddish brown; the former is the shortest, and is rather roundly prominent on its outer side, where it is strongly and obtusely produced at its extremity, this extremity being continued on its upperside by a short, strong, pointed, corneous apophysis; the digital joint is large, oval, produced, and pointed at its extremity, which terminates in a short curved black spine; the palpal organs are well developed and prominent, with a strong, curved, corneous process at their fore extremity on the outer side, and another shorter, more obtuse, and not curved, close to it on the inner side.

The *abdomen* is oval, very convex above, and projects over the base of the cephalothorax; its upperside is black, and the underside is of a somewhat vinous black hue. The female resembles the male in colour.

Adults of both sexes were found under stones on the plains of the Jordan.

ENYO ATRICEPS, sp. nov.

Male adult, length $1\frac{1}{4}$ line.

This species is rather smaller than the preceding, and, though resembling it in form and general structure, differs in various particulars: the clypeus is not so high, being no more than half the height of the facial space; the *cephalothorax* is yellow, the *caput* being of a deep reddish brown-black; the *falces* are rather lighter in colour; the *legs* yellow, the femora and tibiæ slightly suffused with brown; the *palpi* also are yellow; the radial is shorter than the cubital joint, and has a not very large blackish, red-brown, pointed, corneous spine or apophysis in continuation of its outer extremity; the digital joint is not so large in proportion as that of *E. luctuosa*, but, like that, its fore extremity terminates in a small curved black spine: the palpal organs are well developed, but not very complex;

they have two or three corneous processes in front ; the strongest of these is on the outer side, and is in the form of a hook, with a sharp black spiny point.

The *abdomen* is black on the upperside, and yellowish mixed with vinous beneath ; the branchial opercula are yellow.

An adult of each sex was found under a stone on the skirts of the Lebanon.

ENYO LUTIPES, sp. nov.

Male adult length $1\frac{1}{4}$ line ; female adult $2\frac{3}{4}$.

This species is similar in size and general structure to *E. atriceps* ; but the clypeus is higher, considerably exceeding half of the facial space. The *cephalothorax* is yellow, rather tinged with orange ; the upper part of the caput is of a dull red-brown colour ; the *fulces* are brown ; the whole of the underside of the Spider, with the legs and palpi, are clear yellow. The *legs* are long and slender ; their relative length 4, 1, 2, 3. The *palpi* are moderately long and not very strong ; the radial is not half the length of the cubital joint, nor so strong ; it is broadly and obtusely produced on its outer extremity, the produced part terminating on its upperside in a short, strong, sharply curved, and prominent sharp-pointed spine : the palpal organs are well developed, but not very complex ; they have two or three small, dark, corneous processes at their fore extremity, and are obtusely prominent behind, where, from the inner side, issues a long, filiform, black spine, which curves round their inner side beneath but quite free from the inner margin of the digital joint, its slender point curving round beneath the fore margin of the same, and terminating on the outer side of the palpal organs.

The *abdomen* is short oval, very convex above (in the female it is almost globular in form) ; it is of a glossy jet-black colour above, the underside and lower part of the sides yellow ; the junction of the yellow and black colours is well defined and obliquely curved, following the profile-line of the abdomen.

Adults of both sexes were found under stones on the plains of the Jordan, and an adult female in a similar situation at Jerusalem.

CITHÆRON, nov. gen.

Characters of the genus.

Cephalothorax oval, constricted laterally at the caput ; hind slope gradual ; profile-line even.

Maxillæ oblong, strongly curved, their outline almost semicircular, inclined to the labium, and strongly, but not suddenly, impressed in a transverse direction.

Labium large, oblong, rounded at the apex and constricted about the middle.

Sternum oval, very slightly pointed behind.

Eyes eight, not greatly unequal in size ; in two transverse, curved rows ; the curves directed backwards ; the foremost row is the most

strongly curved; the clypeus exceeds in height the length of the space occupied by the four central eyes.

Legs long, moderately strong; relative length 4, 1, 2, 3; destitute of spines, and with but very few hairs (perhaps denuded?); those on the undersides of the tarsi are squamose. Each tarsus terminates with three curved claws; the inferior one very minute; beneath these are 2-3 straighter, opposed claws.

Abdomen oval, very convex above; spinners six, those of superior pair three-jointed, the two terminal joints directed perpendicularly upwards.

This genus, which I have felt constrained to establish for the reception of two Spiders found in Palestine and Syria, appears to connect the genera *Enyo* and *Agelena*, but to be incapable of inclusion in either of them; it is also allied to the genus *Lachesis*.

CITHÆRON PRÆDONIUM, sp. nov.

Female adult, length $2\frac{1}{2}$ - $3\frac{1}{2}$ lines.

The *cephalothorax* is of a dark yellow-brown colour, with a broad lateral marginal band of a clear yellow; the legs and palpi are yellow. The *eyes* of the hind central pair are oval, oblique and near together but not quite contiguous; they are much further removed from the laterals of the same row; the interval between the fore centrals (which are round and prominent) is greater than that between each and the lateral on its side, with which it is almost but not quite contiguous; the interval between those of each lateral pair is rather greater than that between either of the fore centrals and the hind central opposite to it. The *falces* are not very long, but strong, vertical, and conical in form, and prominent near their base in front; they are similar in colour to the cephalothorax; the *maxillæ* are yellow, the *labium* brownish yellow, and the *sternum* yellow, with strong marginal indentations between the basal joints of the legs.

The *abdomen* is almost destitute of hairs; it is of a uniform dark maroon-brown colour above, and yellowish beneath, with a longitudinally elongate yellow patch immediately above the spinners; the inferior spinners are blackish brown, and only half the length of those of the superior pair, which are of a paler yellowish brown, three-jointed, and turned upwards.

An adult female was found under a stone on the Lebanon, and another in a similar situation at Hasbeiya.

The colours and markings of this Spider are very like those of some species of *Enyo*, but its form and general structure are more like those of *Agelena* and *Tegenaria*, while the *maxillæ* are nearer to those of *Lachesis* and *Enyo*; and in the position of the eyes it differs from either of the genera mentioned.

Genus AGELENA (Walck.).

AGELENA SYRIACA, Koch, Die Arachn. x. p. 110, pl. 354. fig. 827.

An adult male, and females adult and immature, of this handsome Spider were found on the Lebanon and at Beirût.

PROC. ZOOL. SOC.—1872, No. XVIII.

Genus *TEXTRIX* (Sundevall).*TEXTRIX INORNATA*, sp. nov.

Female adult, length $4\frac{1}{2}$ lines.

In form, structure, and in the general position of the eyes this species is very similar to *T. lycosina* (Sund.); but the colours and markings are strikingly different. The *cephalothorax* is dark brown, the caput tinged with yellowish red-brown; the normal indentations are marked by darker lines; and there is a narrow, central, longitudinal white band, which begins near the eyes and ends near the hinder margin, both extremities fining off to a fine line. This band is apparently formed by short, pale hairs.

The *eyes* are seated on a black patch; the two centrals of the front row are the smallest, and those of the hinder row the largest; these last are very prominent and conspicuous.

The *abdomen* is of a uniform dull brownish black and (when in spirit of wine) minutely and pretty thickly mottled with pale dusky; a series of fine angular lines, or chevrons, is visible, chiefly on the hinder part of the upperside. The *legs*, *palpi*, and *sternum* are of a clear brown-yellow, more or less distinctly bounded with dusky brown. The legs are furnished with hairs, bristles, and spines, some of the latter being rather long. Each tarsus ends with three claws.

The *fulces* are of a deep red-brown colour; the *maxillæ* and *labium* rather paler, and narrowly tipped with whitish yellow; the spinners are six in number, those of the superior pair long and two-jointed; the second joint directed upwards over the base of the abdomen.

Seven examples of the female (mostly adult) were found in the crevices and interstices of rubbly bank-sides at Jericho, Jerusalem, and Hebron. I was unable to discover the male, which would probably give some other good differential specific characters.

TEXTRIX PUTA, sp. nov.

Female adult, length $5\frac{1}{2}$ lines.

This species may be distinguished from *T. inornata* by its larger size and its paler (and even plainer) colouring. The *legs* also were destitute of any dark annulation; this last character, however, may be here, as it is in some other Spiders, dependent upon age and other causes.

The *eyes* are of a much more uniform size than those of *T. inornata*, and are not seated on a black patch; the hind centrals are not nearly so large in proportion to the rest, nor so prominent and conspicuous. The *abdomen* is of a uniform pale, dusky, whitish-brown colour; and the genital aperture is smaller than that of the foregoing species, and of a different form.

Adult females were found at Jerusalem.

Genus *TEGENARIA* (Latr.).

TEGENARIA INTRICATA, Koch, Die Arachn. viii. p. 29, pl. 261. figs. 610, 611.

An adult male, with females adult and immature, were found at

Jerusalem, and on the plains of Esdraelon, in dark and ruined buildings.

TEGENARIA ANNULIPES, sp. nov.

Female adult, length $4\frac{1}{2}$ lines.

Although very nearly allied to *T. domestica* (Clerck) [non *T. domestica*, Bl.], this species seems to be certainly distinct; it is much smaller, but resembles it so nearly in the general colouring and markings on the upperside, as to need no special description in these respects. The whole Spider, however, has a brighter, clearer yellow look, and a more spotted appearance; the legs are more distinctly spotted and banded with black-brown; and the *sternum*, instead of being dark brown with a central longitudinal dash and a marginal row of yellow spots as in *T. domestica*, must be described as with those colours reversed—that is, as yellow with narrow black-brown intersections, preserving at the same time the character of the pattern in that Spider, the spots in that species being so much expanded as to become in the present one the ground-colour. This reversal of ground-colour and markings is also observable in the pattern on the upperside of the abdomen when the two species are compared.

An adult female, with immature examples of both sexes, were found in crevices of rocks on the sides of the Lebanon range.

Family HERSILIIDES.

Genus HERSILIADA (Sim.) = *Hersiliola* (Thor.).

HERSILIADA SIMONII, sp. nov. (Plate XIV. fig. 9.)

Male adult, length 2 lines; female adult $2\frac{1}{4}$.

In size, general structure, and appearance this species is similar to *H. oraniensis* (Luc.), but it differs very distinctly in colour and markings. The whole Spider is of a sandy-yellow colour, and the legs and palpi are broadly banded with yellow-brown.

The *cephalothorax* has a deep impression, or indentation, at the junction of the caput and thoracic segments; it has also an irregular band running round above the margins, a central longitudinal one which subdivides into two just behind the eyes, and one from each of the fore pairs of eyes running to the margin of the clypeus; all these bands, or stripes, are of a yellowish-brown colour.

The *abdomen* has a very peculiar and distinct yellow-brown pattern on its upperside; towards the fore part is a largish, somewhat diamond-shaped patch produced forwards; and immediately succeeding and connected with this is an irregularly angular bar, or strong chevron, its angle directed forwards; between this and the extremity of the abdomen, on either side of the ends of the angular bar, is an irregular spot or two of a paler yellow-brown; this pattern is in most examples distinctly but narrowly bordered with a paler yellow edging; this edging is formed by whitish papilliform hairs, with which the whole ground-colour in some specimens is more or less covered; the sides are marked with a longitudinal and roughly dentated, and often indistinct yellowish bar, from which some slightly

oblique lines of indistinct yellow-brown and pale yellow spots drop downwards to the underside. The superior pair of spinners are two-jointed, double the length of those of the inferior pair, and less than half the length of the abdomen; they are yellow, with a brown patch near the base, on the upperside of the terminal joint, which tapers to a point and is furnished with spinning-tubes throughout the length of its inner surface. The relative length of the *legs* is 4, 2, 1, 3, those of the third pair being more than half the length of those of the fourth. The terminal tarsal claws are three in number, and spring from a kind of supernumerary or heel joint.

The *palpi* are moderately long and strong; the radial and cubital joints are of equal length; but the former is rather the strongest, and has no projections or apophyses; the digital joint is large, and has its extremity produced into a longish, tapering point, very like that of some species of *Tegenaria*, and is furnished with two single, slightly curved claws: the palpal organs are well developed, but not complex; they consist of a large, flattish, corneous lobe, round the margins of which runs a slender, filiform, black spine (apparently in a double coil); and from near the centre a somewhat crescent-shaped corneous process projects perpendicularly; one limb of this process is longer than the other, but much more slender, and tapers into a sharp, bent point.

Males and females, adult and immature, were found not unfrequently under stones on the plains of the Jordan, as well as, more rarely, near Jerusalem.

The only structural distinction between this species and *Hersilia caudata* (Sav.) and *H. indica* (Luc.) appears to be that in which it resembles *H. oraniensis* (Luc.)—that is, the absence of an extra joint in the legs (or, more properly, a subdivision of the tarsus). On this ground, and the greater proportional length of the legs of the third pair, both M. Simon and Dr. Thorell have almost simultaneously separated *H. oraniensis*, and formed for it a new genus, *Hersiliada* (Simon), *Hersiliola* (Thorell). As far as I can make out, the name conferred by M. Simon has the priority; but of this I am by no means certain. With regard to the generic value of the subdivision of the tarsus, I confess I am doubtful—that is where other strong and recognized generic characters are common both to those possessing and those not possessing such a peculiarity; it would seem, in this instance, only to mark a group within the genus. As, however, the character is tangible and evident, I have, in deference to the opinion of those able authors, adopted their views here with respect to its generic value in the present instance. It is with the name of one of them, M. Eugène Simon, that I have great pleasure in connecting this distinct and pretty species of a curious genus.

Fam. SCYTODIDES.

Genus SCYTODES (Latr.).

SCYTODES THORACICA, Walck. Ins. Apt. i. p. 271.

An adult female of this Spider was found at Tiberias.

Genus *LOXOSCELIS* (Heineken et Lowe).

LOXOSCELIS RUFESCENS, Duf. An. Sc. Phys. t. v. p. 203, pl. 76. fig. 5.

An adult female of this species was found among the ruins of ancient Jericho.

Fam. PHOLCIDES.

Genus *PHOLCUS* (Walck.).

PHOLCUS RIVULATUS, Savigny, Arachn. d'Egypte, p. 140, pl. 5. fig. 12.

Males and females, adult and immature, were found among ruins and in old buildings at Jericho, Jerusalem, and Beirût.

Fam. THERIDIIDES.

Genus *ARIAMNE* (Thor.)=*Ariadne* (Dol.)=*Prognatha* (Camb. MS.).

ARIAMNE LONGICAUDATA, sp. nov. (Plate XIV. fig. 11 A.)

Male adult, length $2\frac{1}{2}$ lines.

The *cephalothorax* is oval and of a rather flattened form; the general profile-line is level; but there is a deepish transverse dip or depression between the caput and thorax, which gives an appearance of eminence to the former; it is of a dull yellow colour, and has the margins, as well as the hinder part of the caput, broadly marked with blackish brown; besides which, there are two patches, or bars, on the clypeus, one opposite to each fore central eye, of the same colour; the clypeus is sharply impressed immediately below the eyes, but projects greatly thence to the falces, and considerably exceeds in height half the facial space.

The *eyes* are grouped on the highest portion of the caput; four (the largest) form a large square near its summit; and close to each of the two hinder eyes of the square is a lateral pair, the eyes of which are contiguous to each other, the hinder one being close to the hinder eye of the square on its side; the foremost eye of each lateral pair is minute, the smallest of the eight; the two foremost of the square are of a brownish-yellow hue, but appear nearly black, owing to the black spots on which they are placed; the rest are pearly white.

The *legs* are very long and exceedingly slender; their relative length 4, 1, 2, 3, and furnished with fine hairs; they are of a pale yellow colour, suffused with a deeper hue at the joints; the terminal tarsal claws are very minute, and (as far as I could ascertain) three in number.

The *palpi* are similar in colour to the legs, long, slender, and furnished with longish pale hairs; the radial is longer than the cubital joint, both are slightly clavate; the digital joint is small, and the palpal organs simple and inconspicuous; they have a small prominent, curved, corneous sharp-pointed spine near their extremity,

and are turned outwards. The *falces* are short and not very strong; they project in the same plane as the clypeus; and their colour is yellow, with a dusky blackish-brown longitudinal line, or bar, on the upperside of each, in continuation of the bars on the clypeus. The *maxillæ* are rather long and strong; they project beyond the extremities of the falces, are rather hollow on their outer margins, and almost meet over the *labium*, which is about equal in breadth and height, and has its apex somewhat round-pointed. These parts are similar in colour to the legs and palpi. The *sternum* is large, and of an elongate heart-shape; its colour is yellow, suffused with dusky, except a longitudinal central bar-like patch.

The *abdomen* is exceedingly produced behind, where it is long, slender, slightly sinuous in form, and tapers to a blunt point, which is armed with a pale curved (and apparently corneous) process, curving backwards and downwards; near this, on the underside, are four small nipple-like prominences, in form of a quadrangle. The spinners are not remarkable in any way, but the portion of the abdomen behind them is three times the length of that in front; the abdomen is of a dusky colour, almost completely covered by large spots or blotches of a silvery yellowish white, looking like patches of body-colour laid on, and the intersections of these spots form a kind of veining or network; a broad, tapering, brown band, with a prominent point on each side, occupies the central longitudinal line of the fore part; the fine point of this band is black, and is directed backwards; two or three other short black and brown lines follow this. On the underside, between the spinners and the extremity of the abdomen, is a broad somewhat golden yellow-brown band, which tapers to a point at rather more than halfway to the terminal curved process. On the sides of this produced portion of the abdomen are also two or three small black dots.

An adult male of this exceedingly interesting and remarkable-looking Spider was found in webs of *Epeïra opuntia* (Duf.), on prickly pears, at Beirût; but whether inhabiting these webs in a quasiparasitic state (like Spiders of the next genus, *Argyrodes*), I was unable to ascertain; it certainly has a close affinity to them, as also to *Theridion*; but its peculiar form of abdomen, as well as the form of the cephalothorax and the position of the eyes, sufficiently confirm the goodness of the genus *Ariadne*, founded by Doleschall on a still more remarkably characteristic form found in Amboina, *Ariadne flagellum*, in which the hinder part of the abdomen is drawn out, in a form resembling the lash of a whip, to more than fifteen times the length of the cephalothorax. The name given to the genus by Doleschall, *Ariadne*, having previously been conferred by Savigny on a genus of *Dysderides*, has been changed to *Ariamne* by Dr. Thorell (Europ. Spid. pp. 37, 63). The *Theridion fictilium* (Hentz, Boston Journ. Nat. Hist. vol. vi. p. 282), found in Alabama, U. S., is evidently of this genus, and nearly allied to *A. longicaudata*. I have received, both from Bombay and Ceylon (from Major Hobson and Mr. Thwaites), examples of the female of a species exceedingly closely allied to, if not identical with, the present.

Genus ARGYRODES (Sim.).

ARGYRODES EPEIRÆ, Sim. An. Soc. Ent. Fr. 4^e sér. tom. vi. p. 282, pl. 4. figs. 1-9.

Numerous examples of both sexes, adult and immature, of this curious little Spider were found in webs of *E. opuntiae* at Tiberias. Subsequently it was found by M. Simon in a similar situation in Spain, and by him described and the genus characterized in 1866 (An. Soc. Ent. Fr. *loc. cit. supra*). It appeared to have spun its own little irregular snares among the mazes of the *Epeira*'s webs, in which it sat, looking like a little morsel of dead stuff, and perhaps deluding the other Spiders into a belief that it was so, and thus escaping being devoured; at any rate all seemed to live together in perfect harmony. The little pear-shaped long-stemmed cocoons of the *Argyrodes* were fastened to the lines of the web; from most of these, however (which I placed in a pill-box), there emerged in a few weeks a small hymenopterous parasite, one only from each cocoon.

ARGYRODES SYRIACA, sp. nov. (Plate XIII. fig. 10.)

Male adult, length $1\frac{3}{4}$ line; female adult, $2\frac{1}{2}$ lines.

This very distinct species, which resembles the typical forms of the genus in the exceedingly convex and (in profile) somewhat triangular-shaped abdomen, may easily be distinguished by the form of the hinder extremity of the abdomen, which is obtusely produced and divided into four short nipple-shaped divergent prominences. It is of a red-brown colour, marked with black, and mottled with silvery-yellow lines, spots, and markings; and in the female the sides are, in some instances, almost entirely black; in both sexes a deep-brown or black longitudinal marking, with an angular prominent point on either side, occupies the central line of the fore side.

The *cephalothorax* has the thoracic portion higher than the caput; it is of a deep black red-brown colour, and that of the male is produced in front into a somewhat pointed conical eminence directed forwards; around the base of this eminence the eyes are placed on tubercles, and from the centre of the clypeus, which is prominent, there arises a small blunt-pointed, slightly tapering eminence, which, as well as that between the eyes, is furnished with bristly hairs; four central eyes form a largish square; and on either side is a lateral pair, the eyes of each of which are slightly oblique and contiguous to each other; the fore central eyes are the largest, dark-coloured, and, if any thing, wider apart than those of the hind central pair; the rest are of a pearl-white colour; each of the fore central eyes is near, but not contiguous, to the fore lateral on its side. The *legs* are long, slender, and furnished sparingly with fine hairs; they are of a dull yellow colour, somewhat diversely and obscurely clouded, and banded with dark yellow-brown of several hues.

The *palpi* are short, and of a deep black-brown tinged with reddish; the radial and cubital joints are of about equal length; the former

is the strongest; the digital joint is of a long oval form; and the palpal organs are turned outwards; they are not very prominent or complex, though well developed, and, in structure and appearance, very like those of various species of *Theridion*. The spinners are of ordinary size and form. They are (in the male) about equidistant between the cephalothorax and the hinder extremity of the abdomen; in the female they are considerably nearer to the cephalothorax. The eminences, so strongly developed on the caput of the male, are only rudimentary in the female.

Adults of both sexes were found in webs of *Epeïra opuntiae*, among the branches of prickly pears, at Beirût; the egg-cocoon very nearly resembles that of *Argyrodes epeïræ* (Sim.), being of a pear-shape, produced at the larger end into a sort of obtuse neck, and fastened to the webs by a slender stalk, which radiates into two or three lines at its extremity. Although *A. epeïræ* was abundant in the webs of *E. opuntiae* at Tiberias, I could not find it here; nor did I there detect the present species, which seemed here to be abundant.

Genus THERIDION (Walck.).

THERIDION LUTIPES, Cambr. Journ. Linn. Soc. x. p. 382, pl. xii. figs. 46-51.

An adult male and female of this species were found in the Hotel d'Orient at Beirût; it has since then been described by myself under the above name from examples received from Mr. Nietner from Ceylon.

THERIDION SPIRIFER, Cambr. Zool. 1863, p. 8574.

Adults of both sexes were found on low-growing plants at Jerusalem and on the plains of the Jordan; the long slender closely coiled spine connected with the palpal organs of this species makes the male a very easily distinguished Spider; in other respects it is like *T. pulchellum* (Bl.). It appears to have a wide range; I found it in Egypt, as well as at Rome, and have also received it from several parts of France; it was first discovered by myself in the south of England in 1860, and is allied to, if not identical with, *Theridion rufolineatum* (Luc. Explor. en Algér. p. 260, pl. 16. fig. 10); but, as the female only of that species has been described, it is perhaps not the same, but a closely allied one.

THERIDION DENTICULATUM, Walck. Ins. Apt. t. ii. p. 305.

Adults of both sexes, between which and our ordinary European forms of the species I could not detect any difference, were found on low-growing plants at Jerusalem.

THERIDION VARIANS, Koch, Die Arachn. xii. p. 134, pl. 428. figs. 1056, 1057.

An adult male, which I have but little doubt is of this species, was found on a low plant near Jericho.

THERIDION SIMILE, Koch, Die Arachn. viii. p. 79, pl. 275. fig. 649.

In company with the last, an adult male of this well-marked Spider was also found.

THERIDION VENUSTUM, Walck. Ins. Apt. t. ii. p. 316.

An immature female, which I believe to be of this species, was found at Jerusalem.

THERIDION ALBOCINCTUM, Luc. Explor. en Alg. Arachn. p. 262, pl. 16. fig. 4.

An adult male and females were found at Jerusalem, Jericho, and Hebron, generally under stones.

THERIDION FLAVO-MACULATUM, Lucas (*non* Blackw.), Explor. en Alg. Arachn. p. 257, pl. 17. fig. 4.

An adult and immature females were found near Jericho and at Nazareth.

THERIDION ACUMINATUM, Luc. Explor. en Algér. Arachn. p. 268, pl. 17. fig. 10.

An adult female of this easily determined species was found at Jericho.

THERIDION APICATUM, sp. nov.

Female adult, length $1\frac{3}{4}$ line.

This very pretty *Theridion* is closely allied to *T. uncinatum* (Luc.), but, although resembling it in the peculiar form of the abdomen (which has on the hinder part of the upperside a small but prominent conical tuberculiform eminence directed backwards), it differs in colour and some other specific characters.

The *cephalothorax* is of a dark yellow-brown colour; in its form, and also in the size and position of the eyes, it has nothing remarkable about it; the four central eyes form very nearly a square, those forming its hinder side being rather wider apart than those of the fore side; those of each lateral pair are contiguous to each other; the four eyes of the hinder row are about equidistant from each other; the fore centrals are rather further from each other than each is from the fore lateral on its side; the clypeus is transversely impressed immediately below the eyes, but is prominent at its margin, and its height equals at least two thirds of that of the facial space. The *falces* are also prominent; they project very nearly in the same plane as the clypeus, and are of the same colour as the cephalothorax, as also are the *maxillæ*, *labium*, and *sternum*.

The *legs* are rather long, slender, furnished sparingly with hairs, and of a uniform clear pale yellow colour; the *palpi* are similar in colour, but are tinged with reddish at the joints; their relative length is 1, 4, 2, 3.

The *abdomen* has a whitish-yellow ground-colour, and is reddish

chocolate-brown in the central longitudinal line of the upperside, where there is a pattern formed by two parallel rows of eight well-defined bright cream-white spots; the four foremost of these spots are the smallest, the next two the largest and widest apart; on the sides are several stripes, or bold dashes and spots, of a similar colour; and on the almost vertical hinder part, *i. e.* from the conical prominence to the spinners, is another stripe, which is dentated or slightly branched on the lateral margin: the spinners are encircled by four other similarly coloured spots; and a transverse oblong one is situated immediately in the front of the genital aperture; this last is placed upon a strongish deep-red-brown prominence.

Adult and immature females of this species were found among a prickly heath-like plant growing abundantly on the wastes near Nazareth and Jericho.

THERIDION PARTICEPS, sp. nov.

Male adult, length $1\frac{1}{4}$ line.

This Spider belongs to a very distinct group of the genus *Theridion* (of which group *T. acuminatum* (Luc.) may be taken as the type), and is nearly allied to, but, I think, distinct from, *Theridion sexalbo-maculatum* (Luc.).

The *cephalothorax* is short, broad, convex above, and rises from the hinder margin quickly, but gradually, in a curved convex line to the ocular region, which is thus elevated and prominent; the clypeus is hollow immediately beneath the eyes, but is of great height, and slightly prominent close above the falces; these are small and weak. The colour of the *cephalothorax*, *falces*, and *sternum* is a deep brown, that of the *maxillæ* and *labium* a little lighter. The *eyes* do not differ greatly in size; those of the fore central pair are much further from each other than each is from the fore central on its side; while those of the hinder row appeared to be equidistant from each other; the four central eyes form nearly a square, the transverse being longer than the longitudinal diameter; those of the lateral pairs (which seemed to be the largest of the eight) are contiguous to each other, and flattened on their contiguous sides; the hinder row of eyes is longer than the fore one.

The *legs* are short, rather strong, of a yellow colour, annulated with dark brown, and sparingly furnished with hairs. They do not differ much in length; those of the fourth pair are the longest, and of the third pair the shortest; those of the first and second pairs did not appear to differ appreciably, and were but very little longer than those of the third pair.

The *palpi* are short, and (except the radial and digital joints, which are deep black-brown) similar to the legs in colour; the cubital and radial joints are very short, the latter is of a peculiar bent form, and spreads out at its fore extremity. The digital joints are very large, and have their upper or convex sides turned to each other; they have an angular prominence on their outer sides, towards their extremity, and a slightly abrupt and conically produced, bent, corneous-looking point at their extremity. The palpal organs are

prominent and highly developed, but not very complex ; they have a strong, rather twisted, corneous process near their extremity, on the outer side.

The *abdomen* is oval, moderately convex above, slightly pointed behind, and is of a glossy greenish-black colour, thinly spotted, both above and beneath, with silvery spots of various sizes ; on the upper-side two of these spots occupy the fore corners (*shoulders*, as it were) of the abdomen ; across the middle are four others in a curved row, the two central ones of which are the smallest, the end ones large and sometimes duplex ; and three others form a triangle close above the spinners, the apex of the triangle being directed backwards ; in one example these last three spots were confluent, or rather connected by streaks of the same colour ; the sides have a large oval spot forwards ; and on the underside are two more, in a transverse line between the spinners and the middle.

Two examples were found under stones—an adult male at Jerusalem, and an adult female at Hebron.

THERIDION SCRIPTUM, sp. nov.

Male adult, length $1\frac{1}{2}$ line.

This Spider is closely allied to *T. acuminatum* (Luc.), which it resembles in form, but differs in colour and markings.

The *cephalothorax* is of a uniform glossy yellow-brown colour, furnished with a few longish bristly hairs on the caput, which is elevated and prominent, and rises gradually, with a curved profile line, from the thorax ; the clypeus is high, transversely impressed below the eyes, and slightly prominent above the falces. The *eyes* are similar in their size and position to those of *T. particeps*. The *legs* are short and moderately strong, their relative length 4, 1, 2, 3 ; and their colour is yellow-brown, suffused with blackish brown beneath the tibiæ ; the tarsi and metatarsi are dark brown ; and the femora are also suffused with the same, giving the legs a broadly banded appearance ; they are furnished with hairs, some of which are of a bristly nature, and a few on the upperside are erect.

The *palpi* are short ; the cubital joint is nodiform ; and the radial is very short, but broad and spreading at its fore extremity ; the digitals are large, and have their convex sides directed towards each other : the palpal organs are well developed and prominent, but not very complex ; at their extremity are two well-defined corneous prominences, one short, obtuse, and perpendicular, the other long and bent both downwards and backwards and with a sharp spiny point near the extremity of the shorter one. The *falces*, *maxillæ*, *labium*, and *sternum* are similar to those of *T. particeps*, and are of the same colour as the cephalothorax.

The *abdomen* is oval, broad before, and rather pointedly produced behind ; the fore part is high, and, looked at in profile, falls away gradually in a curved line to the spinners (some females, however, are, when distended with ova, of the ordinary form) ; it is of a dark glossy black-brown colour, marked above with some bold but dull yellow markings ; these are plainer on the female than on the male ;

they consist of a broken curved and crescent-shaped band around the fore part, a broad transverse one (divided or interrupted in the middle) nearly across the centre, and, following this, one or two somewhat angular bars, also interrupted in the middle: the spinners are of ordinary form and size, but prominent.

Adults of both sexes were found under stones and among rubbish and herbage on the plains of the Jordan. I found it also in similar situations at Alexandria (Egypt).

THERIDION INSCRIPTUM, sp. nov.

Female adult, length $1\frac{1}{2}$ line.

This species is similar in size and general structure to *T. particeps*, but it differs in the position and size of the eyes, and in the abdomen, which is less pointed behind. The *abdomen* is of a uniform dull black colour; the *cephalothorax* yellow-brown, tinged with blackish, especially in the ocular region, which is diffused with it. The *legs* are yellowish, faintly banded with brown, and the palpi yellow. The *eyes* are large; the fore centrals the largest of the eight, and each of them is almost, if not quite, contiguous to the fore lateral on its side; the hind centrals are, if any thing, slightly nearer to each other than each is to the hind lateral on its side; those of each lateral pair are obliquely seated on a tubercle.

A single example was found beneath a stone on the Lebanon.

THERIDION ERIGONIFORME, sp. nov.

Male adult, length $1\frac{1}{3}$ line; female adult, $1\frac{1}{2}$.

This is a very peculiar species; it is, I think, certainly a *Theridion*; but in the form of its cephalothorax, as also in its general form, it is exceedingly like the Spiders of the genus *Erigone* (Savigny).

The *cephalothorax* is of a longish-oval form, and of a deep red-brown colour; the caput is smooth and glossy, the thorax distinctly granulose, especially on the sides and margins; and there is a strong curved indentation at the point of junction between the caput and thorax; the former of these rises abruptly from the latter, and the hinder part of the latter (thorax) is slightly produced backwards, the produced portion fitting into a kind of corneous socket beneath the fore part of the abdomen; the clypeus is slightly prominent and somewhat full. The *eyes* differ but little in size; they are in two transverse curved rows, of which the fore one is the shortest; the two central eyes of each row are respectively nearer together than each is to the lateral on its side; the eyes of each lateral pair are contiguous and seated obliquely on a tubercle; all, except the fore centrals, are of a bright pearly-white hue. The *legs* are moderately long, rather strong, and their relative length is 4, 1, 2, 3; they are of an orange-yellow colour, the femora and the fore part of the tibiæ strongly suffused with dark brown, and are sparingly furnished with hairs; the tarsi have three terminal claws.

The *palpi* are short, the cubital joint is bent, and much less strong than the radial, which last has its fore extremity simple, but closely fitting to the digital joint, so that it appears almost to form

a portion of it; the digitals are small, and their convex sides are turned to each other: the palpal organs are neither prominent nor complex, and are not easy to be distinguished as separate from the digital joint without very careful inspection with a strong lens; they have a small closely adhering and circularly curved filiform black spine at their extremity on the outer side. The *falces* are small, and there is a widish interval between them at their base; they are also prominent near their bases in front, where there are some longitudinal rows of small tubercles or spiny granulations very analogous to the denticulations on the falces of *Erigone longipalpis* (Sund.). The *maxillæ* are strong, greatly curved, and inclined over the labium, so that their extremities are almost in contact with each other. The *labium* is short, of a subtriangular form, the apex being blunt-pointed; the *sternum* has its surface marked with impressed, shallow, round punctures or impressions. All these parts are rather darker-coloured than the cephalothorax.

The *abdomen* is small, of an oval form, and moderately convex above; it is jet-black above, with four small yellowish-white spots including the whole area of the fore part; these spots are of a somewhat transversely linear form, and the two foremost of them are necessarily much nearer together than the two hinder ones; between these and the spinners are three smaller spots of the same colour, and arranged longitudinally in the central line; these last are less conspicuous in the male than in the female, in which latter sex there is also another small but similar spot on either side of the extremity of the line formed by the three spots just before mentioned.

The female has not the prolongation, noticed above in regard to the male, at the hinder extremity of the cephalothorax, nor the peculiar corneous kind of socket beneath the fore part of the abdomen.

An adult male and female were found among herbage on the plains of the Jordan. In those peculiarities of thorax and abdomen in the male just noticed, this species resembles *Theridion mandibulare* (Luc.)=*Epeira diversa* (Blackw.), a Spider whose position appears doubtful, and perhaps ought to form the type of a distinct genus, but which I have for the present placed in the genus *Pachygnatha* (*vide post*, p. 294).

Theridion conspicuum, sp. nov. (Plate XIII. fig. 11.)

Male adult, length 2 lines.

This species belongs to the group which includes *T. 4-punctatum*, *T. guttatum*, *T. stictum*, and others, bordering closely upon *Lathrodictus*.

The *cephalothorax* is short, broad, and slightly produced behind, and there is a deep circular indentation at the junction of the caput and thorax; the former is chiefly distinguished from the thorax by its rather raised and prominent fore part where the eyes are seated. The colour of the cephalothorax is a deep rich red-brown; and its surface is marked with fine impressed dots or punctures, and has

(chiefly on the sides and margins) some granulations or small pointed black tubercles, which give its surface a roughened appearance.

The *eyes* are in two transverse rows, of which the fore one is shortest and curved, the hinder one being straight; the hind centrals are rather nearer together than each is to the hind lateral on its side, and the fore centrals are further from each other than each is from the fore lateral on its side; the four central eyes form a square, whose hinder side is shortest, and those of each lateral pair are contiguous and placed obliquely: the clypeus is high, transversely impressed below the eyes, and prominent above the falces.

The *legs* are moderately long and strong, their relative length 1, 4, 2, 3; they are of a yellow colour, and the femora are furnished with numerous small, black, pointed denticulations; the terminal tarsal claws are three in number.

The *palpi* are not very long, but slender, and of a dull greenish-olive hue; the cubital joint is prominent, in a somewhat angular form above, towards its fore extremity; the radial is very small at its junction with the cubital, but broad and spreading at its fore extremity; the digital is of a longish-oval form, with a somewhat pointed lobe near its fore extremity, making it bifid at that part: the palpal organs are well developed and rather complex; they have several prominent corneous and spiny processes, one of a semi-diaphanous nature at their extremity. The *falces* are moderately long and vertical, but rather slender and weak. The *sternum* is thickly marked with small punctures, and is of rather a darker colour than the cephalothorax.

The *abdomen* is short-oval in form, and very convex above, being almost globular in the male, but less so in the female. The male has a kind of corneous socket beneath the fore part, into which the hinder extremity of the cephalothorax fits, as in the last species described; it is a deep rich red chocolate-brown colour, and (in the male) has four large circular shallow impressions on the centre of its upperside, somewhat resembling those on the abdomen of *Gasteracantha*; the upperside is also marked very conspicuously with cream-white spots and bands, forming with the ground-colour a pattern which may be described as a longitudinal series of four to five pairs of markings, occupying the whole upperside; the yellow bars and lines are often more or less obliterated or interrupted, and then form simply three nearly parallel longitudinal broken bars, with traces of some short transverse ones; a more or less continuous bar or line of cream-white runs completely round the sides, and divides the upper from the underside; and in front of the genital opening is a small spot of the same colour.

Adult and immature examples of both sexes of this very pretty and distinct Spider were found in numerous localities throughout Palestine, and always beneath stones. The abdomen of the female is destitute both of the four large circular impressions on the upperside and of the socket beneath the fore margin.

Genus *ERO* (Koch).

ERO TUBERCULATA, Degeer, Uebers. vii. p. 93. n. 6, tab. 13. figs. 1-9.

An adult male and females were found under stones and among débris of various kinds near Jericho and at Nazareth.

Genus *CTENOPHORA* (Blackw.).

CTENOPHORA MONTICOLA, Bl. Ann. & Mag. Nat. Hist. June 1870.

An adult and immature females of this striking species were found in irregular snares among prickly pears at Beirût.

Subsequently to this, the species has been described by Mr. Blackwall from Sicilian examples, and a genus (*Ctenophora*) formed for its reception. Mr. Blackwall has also constituted a separate family for this genus and *Galena* (Koch), with which it is undoubtedly connected. If this family should eventually stand, the genus *Ero* ought, it seems to me, to be added to it; for the Spiders constituting the genus *Ero* are characterized by an exceedingly similar armature of the fore legs to that upon which Mr. Blackwall chiefly bases the establishment of the family; between *Ero* and *Ctenophora* there is also great general similarity of form and structure.

Several striking new species of *Ctenophora* have lately been received from Ceylon, where they were captured by native workmen, among numerous other Spiders, in the Royal Botanic Gardens.

Genus *LATHRODECTUS* (Walck.).

LATHRODECTUS EREBUS, Savigny, Arachn. d'Egypte, pl. 3. fig. 9.

Adult females of this fine Spider were found beneath stones near Jericho and at Jerusalem.

LATHRODECTUS PALLIDUS, sp. nov.

Female adult, length $5\frac{1}{2}$ lines; height of abdomen $4\frac{1}{2}$.

This species is nearly equal to *L. erebus* in size, and resembles it in general form and structure; but it may at once be distinguished by its colour and markings, and by the almost perfect smoothness of the abdomen, which in *L. erebus* is thickly clothed with hairs and short curved bristles.

The colour of the *cephalothorax* is yellow-brown, that of the *palpi* and *legs* yellowish; the tarsi, metatarsi, tibiæ, and genua of the latter, as well as the digital joints of the former, being deeply suffused with dark yellow-brown.

The *falces* are dark brown tinged with reddish; the *maxillæ* and *labium* are dark yellow-brown, the extremities of the *maxillæ* and apex of the *labium* yellow; the *sternum* also is yellow-brown, equally divided by a tapering longitudinal band, whose point is directed backwards.

The *abdomen* is of a creamy yellow-white colour, with four deep-red-brown spots forming an oblong about the centre of the upper-

side; the two foremost spots are smaller and nearer together than the hinder ones. Besides these, there are twelve other smaller spots of the same colour disposed widely apart, but symmetrically beside and behind the four before noted; the two largest spots are connected by a dull pale line crossed at right angles in the middle by another similar line which branches out irregularly into several finer lines at its hinder extremity; the sides, as well as the fore and hinder parts and a portion of the underside, are slashed (as it were) by a bold denticular or vandyked pattern of a brownish-yellow colour; the points of the denticulations (which are long and curved) are directed upwards and forwards. The underside has a conspicuous clear yellowish-white somewhat quadrate large patch on its centre; this has six black-brown impressed dots longitudinally in three pairs; those of the central pair are almost contiguous to each other; on either side of this patch, principally forwards, are some brown markings and veinings; close in front of the above-mentioned patch is the genital aperture, the process (or epigyne) connected with which is large, prominent, and of a red-brown colour; the aperture itself is of a transverse oval form. The spinners are red-brown and short; those of the superior and inferior pairs are very strong, and on either side of them is a largish dark brown patch, with two or three conspicuous yellow-white spots.

In the position of the *eyes* this species also differs from *L. erebus*; the hinder row (looked at from behind) is straight, and the four eyes of which it is composed appeared to be separated by equal intervals, though, if any thing, the two centrals are the furthest apart, while in *L. erebus* this row of eyes is strongly curved, the curve directed forwards, and its two central eyes are much nearer together than each is to the lateral on its side; the eyes also of each lateral pair are further apart in *L. erebus* than in the present species. The relative length of the legs is 1, 4, 2, 3; the terminal tarsal claws are three, the inferior one strong and very sharply bent backwards.

Adult and immature females were found in irregular snares spun among low plants on the plains of the Jordan; while the only situation in which *L. erebus* was found was beneath stones.

In a similar situation the latter species was also found, not unfrequently, at Alexandria (Egypt) in 1864.

LATHRODECTUS ARGUS, Sav. Arachn. d'Egypte, p. 137, pl. 3. fig. 10.

Males and females, both adult and immature, of this beautifully marked Spider were found in their snares among low plants near the earth on the plains of the Jordan and near Beirût; the females had usually a sort of domed shelter, covered with bits of leaf and particles of earth, beneath which they sat.

LATHRODECTUS HAMATUS, Koch, Die Arachn. vi. p. 105, pl. 206. figs. 507, 508.

An adult male and females were found beneath stones both at Jerusalem and near Jericho.

Genus ERIGONE (Savigny) + *Nerienne* (Bl. ad partem), and
Walckenaëra (id.).

ERIGONE RURESTRIS, Koch, Die Arachn. iii. p. 84, pl. 101.
fig. 231.

Adults of both sexes of this widely dispersed Spider were found at Jerusalem, the Lebanon, and Beirût.

ERIGONE INCAUTA, sp. nov.

Male adult, length $\frac{3}{4}$ of a line = $\frac{1}{16}$ of an inch.

This Spider is of the ordinary form, colour, and general structure.

The *cephalothorax* rises gradually from the hinder part to the caput, which is bluff and rounded, but not elevated, and the normal grooves and furrows are not strongly marked; it is glossy and of a deep reddish-brown colour, with black margins. The *eyes* are in two curved rows, of which the foremost is the shortest; those of the hind central pair are rather further from each other than each is from the hind lateral on its side; those of the fore central pair are the smallest of the eight, and are contiguous to each other; the eyes of each lateral pair are seated obliquely on a tubercle. The height of the clypeus is more than two thirds that of the facial space. The *legs* are moderate in length and strength, and do not differ much; their relative length is 4, 1, 2, 3; and they are of a yellow colour tinged with red.

The *palpi* are short and darker-coloured than the legs; the radial and cubital joints are of about equal length, the former is the least strong, and is produced rather on the outer side in front into a longish, prominent, pointed apophysis, which is a little curved downwards, and has a small, prominent sharp tooth beneath; the palpal organs are well developed and prominent, and have a circularly coiled black filiform spine at their extremity.

The *abdomen* is oval and projects over the base of the cephalothorax; it is glossy black and very sparingly clothed with hairs.

Although closely allied to many European species, this one may easily be distinguished by the form of the radial joints of the palpi, taken in conjunction with its colours, the position of the eyes, and the form of the cephalothorax; it is perhaps most nearly allied to *Nerienne herbigrada* (Bl.).

Two adult males were found under a stone—one at Jerusalem, the other on the Lebanon.

ERIGONE INEXPEDIBILIS, sp. nov.

Male adult, length $\frac{1}{20}$ of an inch.

This is one of those puzzling species which, though presenting no strongly marked and easily seized differential character is yet undoubtedly distinct from any other; it is allied to *E. rurestris* (Koch), and perhaps more nearly to *Nerienne* (*Linyphia*) *oblita* (Cambr.), and *N. pallipes* (id.); but perceptible differences in the relative position of the eyes, the armature of the legs, and the

PROC. ZOOLOG. SOC.—1872, No. XIX.

structure of the palpal organs are visible on a careful comparison with those species.

The *legs* are shorter and stouter than in *E. rurestris*, and the *falces* also are weaker.

The *cephalothorax* is of a dull yellow-brown colour, suffused with blackish; the normal grooves and indentations are not strongly marked; and the caput scarcely rises above the thoracic level. The *eyes* are in two curved rows of almost equal length; the two hind centrals are slightly further from each other than each is from the hind lateral on its side; the fore centrals are very near together, but not quite contiguous; those of each lateral pair are seated very slightly obliquely on a tubercle; the height of the clypeus is half that of the facial space. The *legs* are rather short and not very strong; and their relative length is 4, 1, 2, 3; they are of a pale dull yellow colour, and are furnished with hairs and a few very slender bristle-like pale spines.

The *palpi* are short; the radial is very short but of the same length as the cubital, and, though very slightly longer in front than beneath, it has no prominence or apophysis at its extremity; the cubital has a single, erect, fine, tapering, black bristle, which issues from near its fore extremity on the upperside; the palpal organs are simple, and consist of a single, large, roundish, corneous lobe, on the surface of which are indistinctly visible some small spiny processes and projections. The *falces* are moderately long, slender, and slightly divergent. The *maxillæ* are short, strong, and very slightly inclined to the *labium*, which, owing to the adherence of some foreign substance, could not be well seen. The *sternum* is convex, heart-shaped, and with the *maxillæ* of a blackish hue. The *abdomen* is long-oval, very sparingly clothed with hairs, and of a dull pale yellow colour suffused with blackish.

A single example found on a dwarf shrub at Hasbeiya.

ERIGONE DENTATA, Reuss-Wider (Mus. Senck. i. p. 229, pl. 15. fig. 8), var. ORIENTALIS, Cambr.

Adults of both sexes were found among water-weeds on the banks of the stream flowing from Elisha's Well on the plains of the Jordan.

These Spiders, although exactly similar in structural detail, and no doubt the same as *E. dentata*, appear to vary from it almost constantly in colour and markings. Out of numerous examples taken in England, very few, and those chiefly females, presented any trace of even a longitudinal, central, pale band on the abdomen, the usual colouring being a uniform deep black-brown; while out of equally numerous examples found in Palestine (and also in Egypt in 1864), not one was of that normal European colour, most of them being of a pale yellow with a stronger or weaker broken longitudinal brown-black band on either side of the central line of the abdomen; in some examples these brown-black bands are represented merely by three large spots; the underside is also similarly marked; only two or three had the abdomen black-brown with a broad longitudinal cen-

tral yellow band giving off fine, short, lateral lines of the same colour.

To this, seemingly constant, eastern variety I have added the name of *orientalis*.

ERIGONE FEMORALIS, sp. nov.

Female adult, length 1 line.

The *cephalothorax* is of ordinary form, and nearly resembles that of *Nerienne livida* (Bl.). The *caput* is not raised above the thorax; and the *clypeus* is vertical, rather exceeding half the facial space in height; the normal indentations are tolerably strong; and it is of a very deep rich brown colour. The *eyes* are small and do not differ much in size; they are in the usual position of two transverse curved rows; those of the hinder row are equidistant from each other, and those of each lateral pair are obliquely seated on a tubercle; those of the fore central pair are the smallest of the eight, very dark-coloured and difficult to be seen, and contiguous to each other; the space between each of these and the hind central nearest to it is very little less than that between the two hind centrals. The *legs* are moderately long and strong; their relative length 4, 1, 2, 3, those of the fourth pair being perceptibly longer than those of the first; they are furnished with hairs and fine bristles, and are of a brightish red-brown colour softening to reddish yellow at the tarsi, the femora being of a very deep red-brown and much darker than any other portion, while the tibiae have a pale yellow ring round their extremities nearest to the genual joints. The *palpi* are moderate in length, of a dark brown colour, and furnished with hairs and bristles. The *falces* are short, strong, and obliquely truncated on their inner extremities, where they are furnished with fine sharp teeth. The *maxillae* and *labium* are normal in form; these parts, with the *sternum*, are similar in colour to the cephalothorax; the sternum, however, is of rather a deeper hue. The *abdomen* is long-oval and moderately convex above; it projects over the base of the cephalothorax, and is of a glossy jet-black colour, very sparingly clothed with fine hairs; the genital aperture is large, of a circular or somewhat horseshoe form, and its corneous margins are red-brown.

A single adult female was found on a low-growing plant on the plains of the Jordan.

ERIGONE DENTIPALPIS, Westr. (Aran. Suec. p. 199), var. *SYRIACA*, Cambr.

Although at present I imagine this to be of the same species as our common European form *E. dentipalpis*, still, as all the distinguishing specific characters of that species are found, as it were, exaggerated or in excess in the present Syrian examples, it may possibly turn out, on further careful examination and comparison, to be distinct; meanwhile I have stamped its variation from our European form by the additional name var. *syriaca*.

These Syrian examples are rather larger than any I have yet found in Europe; the lobes at the fore extremity of the radial joint of the

palpus are bolder and larger, though apparently of the same form; also the tooth beneath this joint is much stronger; there are also some small denticulations visible along the central longitudinal line of the caput when looked at in profile.

Five adult males were found on the roadway between Hasbeiya and Damascus.

ERIGONE SPINOSA, sp. nov. (Plate XIII. fig. 12.)

In size, form, general structure, and armature of the cephalothorax and falces, this yet very distinct species nearly resembles *E. longipalpis* and others; the *legs*, however, are of a redder hue; and the projection or apophysis beneath the fore extremity of the cubital joint of the palpus distinguishes the male at a glance. This apophysis in all the other closely allied species of this group of the genus *Erigone* is either perpendicular to the joint or has a backward direction; in this species, however, it is directed strongly *forwards* beneath the radial joint; it is also slightly sinuous, and less robust than the corresponding apophysis in the other species. The radial joint of the palpus is shorter than the cubital, and has no tooth-like spine beneath it, though in some Egyptian examples there was in the place of such a spine a very minute kind of tubercle and bristle: at the fore extremity on the upperside the radial joint is simply emarginate, and the lobes or prominences thus formed are less conspicuous than in most of the other species alluded to; the prolongation, however, at the fore extremity of the underside of the joint is longer. The digital joint is small, not longer than the radial; and the palpal organs present nothing remarkable in their structure or development. The *cephalothorax* of the male has some small somewhat denticular tubercles in a longitudinal row along the middle of the caput, each being surmounted by a bristle. The female (found only in Egypt) had the falces and margins of the cephalothorax armed with spines, though not so strongly, similar to the male.

E. spinosa appears to be a widely dispersed species. I found it at Cairo and Alexandria (Egypt), also (in Palestine) on the road between Jezreel and Nazareth, as well as at Rome. I have since received it from M. Simon, by whom it was captured near Paris.

ERIGONE PASTORALIS, sp. n. (*Walckenaëra*, Bl.).

Male adult, length $\frac{3}{4}$ of a line, or $\frac{1}{16}$ of an inch.

The *cephalothorax* of this species is of a glossy deep rich red-brown colour margined with black; the *legs* are reddish orange-yellow, and the abdomen brownish black. There is no distinct elevation of the caput, which is gradually confluent with the thorax; the normal indentations are fairly marked; and the height of the clypeus, which is slightly prominent, equals one half that of the facial space. The *eyes* do not differ much in size; those of the hinder row are equidistant from each other; the fore centrals are the smallest and darkest-coloured of the eight and contiguous to each other; the four central eyes form nearly a square whose fore side is the shortest; those of each lateral pair are contiguous to each other, and are seated

obliquely ; behind each hind lateral eye is a slight longitudinal depression or indentation. The *legs* are rather long, slender, and provided with hairs ; their relative length is 4, 1, 2, 3.

The *palpi* are short ; the radial joint is of about the same length, but stronger than the cubital ; it spreads rather in a rounded form over the base of the digital joint, and has a largish circular notch or emargination at its upper extremity towards the outer side ; the digital joint is small and of an oval form, and the palpal organs are not very complex or prominent ; the *falces* are short and powerful, obliquely truncated at their inner extremities, where they are armed with fine teeth. The *abdomen* is of a slender oval form, and projects but very slightly over the base of the cephalothorax.

This species belongs to the group of the genus *Erigone* which includes *Walckenaëra ignobilis*, Cambr., and *W. aggeris*, Cambr., and, although it does not possess any remarkably striking distinctive characteristic, is yet quite distinct from any recorded species.

Two adult males were found among low-growing prickly plants on the waste near Mount Tabor.

ERIGONE PAVIDA, sp. nov. (*Walckenaëra*, Bl.). (Plate XIV. fig. 22.)

Male adult, length $\frac{1}{17}$ of an inch, or rather less than $\frac{3}{4}$ of a line.

This species is very similar to *Walckenaëra nemoralis* (Bl.) in size, colour, and general structure, but may be distinguished without difficulty by the structure of the palpi. As in that species, it has the upperside of the abdomen covered with a punctuose coriaceous epidermis ; and the abdomen projects closely over the base of the cephalothorax ; the cubital joint of the palpus is longer and stronger than the radial, and of a clavate form ; the radial is slight and produced at its extremity *in front* into a tapering pointed apophysis, and on the outer side into a shorter, broader, and obtuse one ; the digital joint is of a somewhat irregular form, having a kind of conical curved prominence at its base on the upperside, the extremity of this prominence being in near proximity to that of the pointed apophysis of the radial joint ; this character of the digital joint distinguishes it readily from *W. nemoralis* (Bl.) : the palpal organs are well developed and rather complex, and have a small black curved spine with a prominent point at their extremity.

A single adult male was found under a stone at Hasbeiya.

Genus LINYPHIA (Latr.).

LINYPHIA ALBULOIDES, sp. nov.

Male immature, length rather less than $1\frac{1}{2}$ line.

This Spider is in colour and markings exceedingly like *L. albula*, Cambr., but may be distinguished at once by a central longitudinal dark brown line on the cephalothorax ; this line is bifid before, the bifid portion beginning at the junction of the caput and thorax, each of the two parts thence running to the hind central eye opposite to it. The *legs* are long and slender ; their relative length 1, 4,

2, 3, and they are furnished very sparingly with hairs and a few short dark spines; they are of a yellowish colour, with one or two faint dusky brown annulations. The *palpi* had the palpal bulb large and tumid, but undeveloped.

An immature male was found on low-growing plants near Jericho.

LINYPHIA CONGENER, sp. nov.

Female adult, length $1\frac{1}{4}$ line.

This Spider is closely allied to *L. albula*, Cambr., and *L. alticeps*, Bl., as well as to *L. albuloides* (the species last described); it resembles this latter in the bifid line on the *cephalothorax*, which is yellow and has also a blackish marginal line. From *L. albula* it differs in having the sternum of a blackish-brown colour. The *abdomen* is white, with a central longitudinal dark brown bar (which emits fine branches from its sides) on the fore part of the upperside, and continued in a fine line to the spinners; there are also two longitudinal rows of dark nearly confluent spots on the hinder half converging to the spinners: the sides have some ill-defined, oblique, blackish-brown lines; and the underside is black-brown, with three elongate yellow-white spots disposed longitudinally in the central line. The epigyne connected with the genital aperture is simple but prominent, and was apparently fully developed.

The *legs* are long and slender; their relative length 1, 4, 2, 3; they are furnished with hairs and some fine spines, and are of a yellow colour, distinctly annulated with dusky brown.

Adult females of this species were found among shrubs on the Lebanon.

LINYPHIA LEPROSA, Ohl. Die Aran. der Provinz Preuss. p. 47, = *L. confusa*, Cambr. Linn. Trans. xxvii. pp. 427 & 462.

An adult female of this species was found on the Lebanon.

LINYPHIA FRUTETORUM, Koch, Die Arachn. xii. p. 123, pl. 424. figs. 1044, 1045.

Adult females of this very distinct species (though closely allied to *L. pratensis*, Bl.) were found among low-growing plants at Hebron and near Jericho.

Genus PACHYGNATHA (Sundevall).

PACHYGNATHA LISTERI?, Sund. Vet. Akad. Handl. 1829, p. 210.

An immature female of what I believe to be the above species (though from the immature example its specific identity could not be decided with absolute certainty) was found at Damascus.

PACHYGNATHA? MANDIBULARE, Luc. Explor. en Algér. p. 260, p. 17. fig. 1.

Adult males and females of this striking-looking species were found at Jerusalem and near Jericho, generally under stones, but the male occasionally running on the ground. Doubts have been expressed

above, p. 285, upon the genus of this Spider. The form of the palpi and palpal organs of the male differ decidedly from the very peculiar and constant form of those parts in all the species of *Pachygnatha* I have ever seen; in this respect it resembles many species of the genus *Theridion*. The general form of the cephalothorax, the position of the eyes, and the large size and form of the falces appear to connect it with the former; but it must be remembered that none of these characters are, either by themselves or probably together, of generic importance; while in the form of the maxillæ and labium it is decidedly different from *Theridion*, to which it was referred by M. Lucas, and somewhat so from *Pachygnatha*. Mr. Blackwall, who was acquainted only with the female, placed it in the genus *Epeïra*, to some species of which the female bears certainly very great general resemblance; but the maxillæ and labium do not agree with *Epeïra*, and, as far as I have observed, it does not spin a geometric web. Mr. Blackwall also calls attention to a striking difference from *Epeïra* in respect of the lengths of the legs. I am inclined to think that it will eventually be necessary to form a genus for it, between *Theridion* and *Pachygnatha*.

I have received examples of both sexes from Jersey and Serk; and have also myself found it under stones among the ruins of the baths of Caracalla at Rome, as well as at Cairo, Egypt.

Fam. EPEÏRIDES.

Genus TETRAGNATHA (Latr.).

TETRAGNATHA MOLESTA, sp. nov.

Male adult.

In form, size, general structure, and colour this species very nearly resembles *T. extensa*, Walck., for which it might be mistaken until the falces were carefully examined; these, in the present species, have each, in addition to two parallel longitudinal rows of teeth along their inner sides, two larger teeth at their upper extremity: one, towards the outer side close to the insertion of the fang, is strong, somewhat flattened from some points of view, and has an enlargement or rudimentary tooth near the middle; the other, towards the inner side, is also equally strong and flattened, but has no enlargement near the middle; the teeth of the two inner parallel rows enlarge as they come near the extremity, except the last tooth on the upperside, which is small and situated close beneath the large one above mentioned as towards the inner extremity; the *fang* of each of the falces has a strongish compression on its inside near the insertion; and the compression is followed by a rudimentary tooth or enlargement.

The *cephalothorax* differs from that of *T. extensa* in having a broad, central, longitudinal, brown band running backwards from the eyes (where its breadth equals that of the hinder row) to the hind margin, where it is almost pointed; this band is composed of several almost confluent brown bars or stripes; the rest of the cephalo-

thorax is slightly suffused with dusky, and has a clear, pale, narrow margin.

An adult male was found on low plants near the stream running through the plains of the Jordan from Elisha's Well, and another in a similar situation near Beirût.

TETRAGNATHA MINITABUNDA, sp. nov.

Male adult.

In size and general form this species also nearly resembles *T. extensa*; its *cephalothorax*, however, is shorter and broader in front, and is of a dark yellow-brown colour with a broad marginal band of a lighter hue, and well defined by a kind of zigzag, irregular, dull orange-yellow line. The *eyes* are very conspicuous from the black spots on which they are seated, and the length of the transverse space they occupy; each fore lateral eye is very minute and seated near, but not quite contiguous to, the hind lateral. The *falces* have the normal double row of teeth on their inner sides; but the upper row is deficient, several teeth being absent from near the fore extremity of the row; at the upperside of the fore extremity of each of the falces is a stronger tooth than any one of those in the above two rows; the tooth is pointed, tapering, directed forwards, and has the slightest possible approach to being bifid at its extremity; close to its base on the inner side is another and much smaller tooth.

The *abdomen* is corrugated along its outer margins. The *palpi* are shorter than in *T. molesta*; and the palpal organs vary a little, though in general form and structure their resemblance to those of that species, as well as to those of *T. extensa*, is very remarkable; the dentition, however, of the falces, joined to the form, colour, and markings of the cephalothorax, and the position of the fore lateral eyes readily distinguish it from both.

This Spider was found among plants in a moist place between Hasbeiya and Damascus.

TETRAGNATHA PERLONGIPES, sp. nov.

Male adult, length $1\frac{3}{4}$ line; length of a leg of first pair $10\frac{1}{2}$ lines, length of a leg of the third pair $2\frac{1}{2}$ lines, length of a leg of the fourth pair 4 lines.

This species differs from all the European species of *Tetragnatha*, as well as from the two foregoing, in the far less development of the falces and in the shorter maxillæ; the character also of the palpal organs is different. In some respects it approaches near to the group of exotic species, of which *T. decora*, Bl. (gen. *Meta*, Koch?), found in India and Ceylon, is an example; but, on the whole, I imagine that it may become eventually the type of a new genus.

The *cephalothorax* is rounded behind and compressed laterally before; it is yellow in colour, with a broad, central, longitudinal, dark, dusky brown band, as wide in front as the length of the hinder row of eyes, and nearly pointed behind; this band is composed of

broken bars and markings, of which some are somewhat convergent towards the normal indentation at the junction of the caput and thorax.

The *eyes* are large, but not greatly unequal in size; they compose two transverse parallel rows on the fore part of the caput; the front row is the shortest, its eyes are wide apart from each other and seated on conspicuous black spots; those of the foremost row are equidistant from each other; and the hind centrals are further from each other than each is from the hind lateral on its side.

The *legs* of the first and second pairs are very long, nearly six times the length of the Spider itself; their relative length is 1, 2, 4, 3; those of the third pair are very short, less than one-fourth of the length of those of the first pair; they are of a dull orange-yellow colour banded with dusky brown, and furnished with hairs and a few short spines.

The *palpi* are short, of a yellow colour, and furnished with bristly hairs; the radial is much longer and more robust than the cubital joint; it is generally tumid and enlarged at its fore extremity, where on its margin there are two or three long black bristles; the digital joint is not very large, and is more of the ordinary oval form than that of *T. extensa* and others, and its convex side is towards the falces: the palpal organs are well developed and rather complex; they consist of various corneous processes and spines, one of which, on their inner side and immediately beneath the fore edge of the radial joint, is prominent, obtuse, and terminates with several long, strong, black bristles.

The *falces* are of a deep reddish-brown colour, and do not extend beyond the extremities of the maxillæ; they are vertical, moderately strong, and very slightly divergent at their extremities. The *maxillæ* are straight and enlarged at their extremities, and are quite, or rather more than, double the length of the *labium*, but much shorter than those of *Tetragnatha extensa* &c. The *labium* is somewhat of a quadrate form with the apex rather rounded. The *sternum* is of a blackish-brown colour; the fore margin is yellow, and it is divided by a longitudinal tapering stripe of a similar colour.

The *abdomen* is oblong, of a dull yellow colour, mottled with golden or silvery metallic spots on the sides as well as on the upper-side, which last has a pattern on it formed by two longitudinal, nearly parallel, zigzag or dentated, broken, blackish lines, while the sides are marked with fine oblique striæ; the underside is dark brown and has two parallel longitudinal bars running throughout its length, of a pale golden-metallic hue; the spiracular plates are large and of a dull pale yellowish hue. The abdomen of the female is rather enlarged and elevated about the middle of the upperside; the epigyne is peculiar, being broad, oval, oblong, and flat, rounded at its extremity, and extends backwards in near proximity to the surface of the abdomen.

An adult male, and females both adult and immature, were found among water-weeds near Elisha's Well on the Jordan plains.

Genus EPEÏRA (Walck.).

EPEÏRA HERII, Hahn, Die Arachn. i. p. 8, pl. 2. fig. 5.

Adults and immature examples of both sexes of this Spider were found among grass and herbage on the plains of the Jordan.

EPEÏRA INCONVENIENS, sp. nov.

Female adult, length 3 lines.

This Spider, which is nearly allied to *E. similis*, Bl., may at once be distinguished by the form of the epigyne (or process connected with the genital opening); this, in the present species, is broad and strong, and rather long, tapering towards its extremity, and running backwards in close adhesion to the abdominal surface.

The *cephalothorax* is yellow, strongly margined with black; the *caput* is slightly suffused with dusky blackish brown, especially at its junction with the thorax. The *legs* are yellow, barred on their undersides with black-brown; and their relative length is 1, 2, 4, 3. The *sternum* is yellow, with black-brown margins, the junctional line of the two colours sharply and strongly dentated.

The *abdomen* is of a short oval form, and deep; but its upper surface is rather flat, and it projects over the base of the cephalothorax; its general ground-colour is yellow, mixed and spotted minutely with brown; an oval area comprising nearly the whole of the upper surface is bounded by a strong and obtusely dentate black line or bar; within this area is a broad, longitudinal central band of a clearer yellow than the rest of the surface, and, tapering backwards, is obscurely dentated on its margins; this band is longitudinally bisected by a faint brown line which runs to the spinners, and is crossed at right angles towards its fore part by a similar line; some finer lines of the same nature and colour branch out laterally from the above-mentioned line towards its hinder part; the sides have a reddish and yellow mottled appearance, and are marked by oblique lines of black elongate spots or short dashes; the spinners are surrounded near their base (on the abdomen) by alternate yellow and black-brown blotches; and the underside of the abdomen has its surface, in a large somewhat quadrate form, thickly mottled with brightish yellow; and there is a short transverse black bar close in front of the extremity of the epigyne.

An adult and immature examples of this Spider were found on low-growing plants at Beirût.

EPEÏRA NETA, sp. nov.

Male adult, length 1 line; female adult, length $1\frac{1}{2}$ line.

This very pretty and distinct little species belongs to the group which includes *E. herii* (Hahn), *E. trifasciata* (Koch), and *E. calva* (Bl.). The *cephalothorax* of the male is of a dull reddish-orange colour margined with black; and the *caput* is distinctly suffused with brownish black. The *legs* are similar to the cephalothorax in colour, and are banded near the joints with black-brown;

the upper half of the femora of the first and second pairs are *wholly*, and those of the third and fourth pairs *partially* of the same colour; they are furnished with hairs, bristles, and long spines.

The *palpi* are of the ordinary epeiriform character; the cubital and radial joints have each a long, strong, curved, spiny bristle issuing from their upperside; the digital joint is prominent on the outer extremity in a somewhat conical or pointed form; the palpal organs are highly developed, prominent, and complex, with corneous spines and processes.

The *abdomen* of the male is small, oval, and black, with four elongate yellow-white spots on the fore part of the upperside in a quadrate form, the two foremost of the spots being oblique; and above the spinners is another spot of the same colour; that of the female is much larger and projects over the base of the cephalothorax; it is also black, but is marked on the upperside with two longitudinal broken bars wide apart from each other, and each composed of 3-4 more or less confluent yellow-white blotches or large spots, the largest being at the fore extremity; in some examples this leaves the intermediate space in the form of a broad, central, longitudinal, dentated, black band; a large yellow-white spot is situated just immediately above the spinners; and on the underside are two longitudinal, parallel, yellow-white bars; these are each composed of two (sometimes confluent) elongate patches or spots. The underside of the abdomen of the male has only a spot of the same colour on either side of the fore part.

An adult male and several females were found on the plains of the Jordan among low herbage, and an adult female in a similar situation at Tiberias.

EPEÏRA INCONGRUA, sp. nov.

This species is very nearly allied to *E. conica* (Bl.) and *E. oculata* (Walck.) both in form, structure, colour, and size; but while differing also in the structure of the palpal organs, it may be at once distinguished from these species by the much greater development of the protuberance at the extremity on the upperside of the abdomen; this protuberance, while much longer and more distinct in all the examples met with, was in one (♀) even enlarged and bent downwards at its extremity.

Both sexes (adult) were found in geometric snares on low-growing plants at Hebron.

EPEÏRA CUCURBITINA, Walck. Ins. Apt. ii. 76.

An immature male of this species was found at Hebron.

EPEÏRA LUCINA, Savign. Arachn. d'Egypte, pl. 3. fig. 4.

Adult females of this Spider were found among low-growing plants on the banks of the stream leading from Elisha's Well near Jericho. It was also found in a similar situation in 1864 near Alexandria, Egypt.

EPEÏRA ANTRIADA, Walck. Ins. Apt. ii. p. 83.

An immature female of this species was found in the Hotel d'Orient at Beirût.

EPEÏRA APOCLISA, Walck. Ins. Apt. ii. p. 61.

Adults of both sexes were met with in geometric snares spun among low-growing shrubs and weeds at Jericho and Tiberias.

EPEÏRA ADIANTA, Walck. Ins. Apt. ii. p. 52.

An adult male and females were met with in geometric snares at Jerusalem, Nazareth, and on the plains of Esdraelon. I can find no structural distinction between these examples and those met with in England; but the former were all of much larger size.

EPEÏRA PERPLICATA, sp. nov.

In a Spider so nearly resembling *E. solers* (Walck.), and yet so evidently distinct, it will perhaps be best just to note the most tangible points of difference. It is in general rather less in size, though some examples were fully as large as any I have ever met with of *E. solers*; and the abdomen is more of a subtriangular and less globular form; it is less clothed with grey pubescence, and has a firmer and more coriaceous kind of integument; and the surface of the abdomen is furnished, sometimes pretty thickly, with longish and often semidiaphanous spiny bristles; it has the abdominal pattern better and more continuously defined by the external dentated lines, though more obscure in other respects; the ground-colour of the abdomen in *E. solers* is sprinkled with dark dots and spots, which in the present species are represented by short, dark, irregular lines; and on the underside the two opposite curved yellowish bars constantly present in *E. solers* are commonly replaced by four spots or blotches, as if representing merely the four extremities of the bars in that species. The eyes of the lateral pairs, when looked at obliquely from the front, are more nearly in a straight line; a very marked differential character in the adult male is furnished by two thickly set, parallel, longitudinal rows of numerous, very short, strong spines beneath the tibiæ of the legs of the second pair; these have a kind of tuberculous look; also beneath the femora of the same legs are two rows of less conspicuous and more thinly set as well as finer spines; and on the fore side of the femora of the second pair of legs in the adult male there is a straight row of strongish nearly perpendicular spines directed a little outwards, and comprising the whole length of the joints; and the legs generally have a more spiny appearance than those of *E. solers*.

In the *palpi* the horn-like process at the base of the digital joints is, in the present species, more sharply curved at its extremity; and the palpal organs also differ slightly, but distinctly, in structure. In the female the epigyne is longer, not quite so strong, and more sharply bent backwards in the middle; and in both sexes the legs appear to be in general less conspicuously banded. Some female specimens have

no appearance of annulation of the legs at all, while one adult male (found at Nazareth) had the legs very distinctly banded.

Adult females and immature males were found at Jericho, Tiberias, and Beirût, an adult male at Jericho and another at Nazareth. All were found on low-growing plants in geometric snares.

EPEÏRA SOLERS, Walck. Ins. Apt. ii. p. 41.

An adult male and females were found at Jerusalem and on the plains of Esdraelon; they did not differ in any respect from the European forms of the same species.

EPEÏRA CIRCE, Savign. Arachn. Egypte, pl. 2. fig. 9.

An adult male and females were found at Jerusalem.

EPEÏRA OPUNTIÆ, Duf. An. Sc. Phys. tom. iv. pl. 69. fig. 3.

Adults and immature examples of both sexes (except the adult male, which was rare) were found in abundance at Tiberias; the thorn-bushes in the cemetery near the town were a tangled maze of their webs. It was in these webs that the curious quasi-parasitic Spider *Argyrodes epeiræ* (p. 279, *suprà*) was found. At Beirût *E. opuntiae* was abundant among the prickly pears; and in their webs another species of *Argyrodes* (*A. syriaca*, above described, p. 279) was discovered.

Genus *ARGIOPE*, Savign. Egypte, Arachn. p. 124, pl. 2. fig. 6.

ARGIOPE SERICEA (Sav.).

Immature examples of both sexes were not rare in geometric webs on low-growing plants on the plains of the Jordan, as well as (but more rarely) in a similar situation at Jerusalem.

ARGIOPE EPEÏROIDES, sp. nov.

Male adult, length $3\frac{1}{2}$ lines; female adult, length $4\frac{1}{4}$ lines.

The *cephalothorax* is oval, laterally constricted at the caput, and flattish on the upperside; it is of a pale yellow colour, and divided longitudinally by a fine brownish line, which has one or two slight enlargements, and in the male a V-shaped marking at the junction of the caput and thorax.

The *eyes* are in four distinct pairs; those of the fore central pair are the largest of the eight, and wider apart than those of the hind central pair, which are very nearly contiguous to each other; those of each lateral pair are contiguous to each other, obliquely seated; and the fore one of each is separated from the fore central on its side by an interval equal to that which separates the fore centrals from each other.

The *legs* are moderately strong and rather long; their relative length 1, 2, 4, 3; between those of the second and fourth pairs the difference is very slight; they are of a pale yellow colour, furnished with hairs and bristles, and, pretty thickly and regularly, with short

fine black spines, each of which last springs from a minute black tubercle, giving the legs a spotty appearance.

The *palpi* are short, and similar in colour to the legs; their general appearance is that of most of the *Epeirides*; the cubital joint is angularly prominent above, in front, where it has two minute black tubercles near together; and from each of these there issues a long, curved, diaphanous spine; the radial joint is very short, and prominent above, and is produced prominently and obtusely on its outer side; it has several longish, curved, pale, spiny bristles issuing from its upperside; the digital joint is oval, and has at its base on the outer side a strong, curved, corneous, red-brown prominence, which projects prominently from beneath the radial joint, so as to make it difficult to see its real origin; the palpal organs project outwards, and are very highly developed, prominent, and complex: they have two strong, corneous, vertical prominences issuing from them; one near their base is the longest and strongest, the other issues from their fore part; near the base of the former, on its inner side, is a short, strong, curved, sharp-pointed spine. The *maxillæ*, *labium*, and *sternum* are of the ordinary character, and of the same colour as the cephalothorax.

The *abdomen* is elongate-oval, pointed at each end; the fore extremity projects over the base of the cephalothorax, and the hinder one over and beyond the spinners; it is of a yellowish-white colour, formed by numerous cretaceous spots; on the upperside are two pale brownish longitudinal bands, one on either side of the central line, tapering and converging to the hinder extremity, about three parts of the way towards which are four small but conspicuous black spots, forming a large and nearly quadrate figure; the two foremost of these spots are the largest and widest apart; the space between the two bands forms a long, narrow, irregularly edged yellowish band, which tapers a little behind; the underside is occupied by a broad, longitudinal, dark, sooty band, which has a narrow white one along its central line; and round the spinners is a sort of circlet of whitish spots. The epigyne is of a dark red-brown colour, somewhat quadrate-oval in form, rather prominent, and looking like a sort of flap, or cover, for the genital aperture. The female has not the four black spots on the abdomen; but in their place is an acutely angular dusky line or bar.

An adult male and two females were found in geometric snares among water-weeds on the banks of the stream leading from Elisha's Well on the Jordan plains.

Fam. ULOBORIDES.

Genus ULOBORUS (Latr.).

ULOBORUS WALCKENAËRIUS, Latr. Gen. Crust. Ins. i. p. 110.

An adult male and females of this Spider were found in geometric snares at Jerusalem and near Jericho; these examples appeared to

be, on careful comparison, undoubtedly identical with *Veleda lineata*, Blackw.

ULOBORUS PLUMIPES, Luc. Explor. de l'Algér. Arachn. p. 252, pl. 15. fig. 8.

Adult females, easily distinguishable from the foregoing species by the tufts on the legs and other marked specific characters, were found in geometric snares at Hebron and Beirût.

Fam. THOMISIDES.

Genus THOMISUS (Walck.).

THOMISUS EDAX, sp. nov.

This species is of the same size, and so nearly allied to *T. cristatus*, Bl., that no description of general structure, or of colour and markings, would suffice to make it readily recognizable from that species, although there are slight differences in these respects; and there also appears to be one good differential character in regard to the colour in the male adult—which is, that in the legs of the present species the femora, genua, and a portion of the tibiæ are of a uniform deep red-brown colour, and entirely without the longitudinal yellowish stripe on the upperside, which, as far as my experience goes, is always visible on those joints of the legs of *T. cristatus*.

The structure, however, of the palpal organs is very different from that species, and serves to distinguish it at once from both *T. cristatus* and several others almost equally closely allied, viz. *T. audax* (Koch), *T. viaticus* (Koch), and *T. græcus* (Koch, ♂); these organs consist of a large, somewhat whorled or twisted circular lobe, surrounded by a long, strongish, filiform black spine, which adheres closely to the margin of the digital joint; from the hinder part of the circular lobe spring two strong, vertical and nearly contiguous corneous processes; one of these is of a somewhat T-shape, or hammer-headed, as in *T. cristatus*, but the cross part of it is much more nearly at right angles to the stem, or handle part; and one portion of the cross is much longer and straighter-pointed; the other process is stronger, curved, sharp-pointed, and its sharp point nearly in contact with that of the longest limb of the T-shaped process. The female resembles exceedingly closely that of *T. cristatus* and *T. audax*; but it is perhaps rather more like the latter.

Two adult males, and several females adult and immature, were found on the plains of the Jordan, and another (female adult) at Jerusalem.

THOMISUS CRISTATUS, Bl. Brit. & Ir. Spid. p. 68, pl. iv. fig. 38.

Adult females, which I have little doubt are those of this species, were found at Nazareth.

THOMISUS VARIUS, sp. nov.

Female adult, length $2\frac{1}{2}$ lines.

This Spider, in the general tone of its colour, resembles both *T. sabulosus* (Koch) and the variety of *T. audax* (Koch) found on heaths in England; but it may at once be distinguished from them by its very spotted appearance, the whole of the abdomen, both above and below, being spotted with conspicuous blackish spots and markings, leaving, however, the ordinary pattern of this group quite distinct.

The *cephalothorax* and *legs* are marbled, or mottled, with cream-white and deep yellow-brown; the former has the usual characteristic markings along its centre, but modified by its broken or dentated margins. The whole Spider is tolerably thickly clothed with prominent and strongish, black, spine-like bristles.

Examples of both sexes, but neither of them quite adult, were found at Hebron and on the plains of the Jordan, running on the ground. Though immature, its very striking and spotted appearance proves it to be a good and distinct species.

THOMISUS TRISTRAMI, sp. nov. (Plate XIV. fig. 16.)

Male adult, length 2 lines.

This fine and distinct species has the *cephalothorax* of the ordinary form, but the normal lateral constriction and other indentations are less strong, in fact the latter are almost imperceptible; it is glossy, and minutely punctured with small impressed points; its colour is a deep red-brown, the ordinary central longitudinal marking being entirely obliterated in some examples, but defined obscurely in others by two opposed, and slightly curved, reddish-yellow bars. The *legs* are furnished with hairs, bristles, and spines; those of the first and second pairs long and strong; all the joints, except the tarsi and metatarsi, are of the same colour as the *cephalothorax*; and the articulations of the joints are defined by narrow yellow-white bands; in some examples the legs are mottled more or less with reddish-yellow; the tarsi and metatarsi of the first two pairs are of a dull yellow; the legs of the third and fourth pairs have those joints also coloured like those of the first two pairs; but the tibiae and genua are mottled with brown and yellow, and striped with white; the remaining joints are similarly but more pale-coloured than in the other legs.

The *palpi* are short; the radial joint is strong, and has a longish projection, or apophysis, at its outer extremity on the upperside; this apophysis is somewhat bifid at its extreme point; and beneath it, on the outer side, is another much stronger and obtuse; and on the underside of the joint is a third apophysis, long, strong, much curved, and with a small pointed prominence beneath it and towards its base: the palpal organs are well developed, but not very complex; their outer margin is encircled by a strong, black, filiform spine; and towards their fore extremity is a strong corneous process, which is produced into a curved sharp-pointed spine.

The *abdomen* is oval, rounded behind, rather of a flattened form, and projects over the base of the *cephalothorax*; it is of a yellowish colour, mottled and marked with deep red-brown and white (with the latter most conspicuously on the sides). The ordinary dentated

pattern on the upperside is present; some oblique lines of blackish red-brown spots traverse the sides, which are wrinkled; the underside is of a dull brown colour, and devoid of any characteristic markings; the spiracular plates are red-brown margined with yellow.

The female is larger than the male, and much paler and less conspicuously marked, but resembles it in its general characters; it appears liable to vary more in this (♀) sex than in the other, some varieties of the former closely resembling rather dark examples of *T. audax* (Koch): the females, however, of many *Thomisi* are exceedingly difficult to distinguish from each other; and it may be that more than one species is included among those examples which at present I suppose may be varieties of *T. tristrami*; but in the absence of the males it is impossible to determine this satisfactorily.

This species appeared to be more abundant than any other one of the genus met with in Palestine and Syria; the females were found under stones, the males running on the ground and upon plants and shrubs at Jerusalem, Jericho, Nazareth, Damascus, the Lebanon, and various other localities. I have taken the liberty of naming it after the Rev. H. B. Tristram, whose name, in connexion with the zoology of Palestine and Syria, is too well known to need any comment.

THOMISUS GRÆCUS?, Koch, Die Arachn. xii. p. 68, pl. 412. fig. 1002.

An adult female, which I believe to be of this species, was found near Jericho.

THOMISUS CONFLUENS, Koch, Die Arachn. xii. p. 67, pl. 412. fig. 1001.

Adult females of this Spider were found at Jerusalem, and on the plains of the Jordan, near Jericho.

THOMISUS RIGIDUS, sp. nov.

Female adult, length nearly 2 lines.

In colour and general appearance this Spider very closely resembles both *T. versutus* (Bl.) and *T. trux* (*id.*), and it is of the same size; the dark lateral band on the cephalothorax, however, of those species is less distinct in the present, the whole of the sides of the cephalothorax being dark-coloured, except a slight mottling with yellow—more resembling, in this respect, *T. simplex* (Cambr.); but from all these it may be distinguished readily, both by the yellow, brown, and white marbled legs, and especially by the abdomen and cephalothorax being furnished with short, stout, erect, clavate bristly hairs: in this character it approaches *T. claveatus* (Walck.); it is, however, a larger Spider than that, and differs greatly in colour and markings; and the clavate hairs appear to be rather less abruptly clubbed at their extremities.

Adult and immature examples were found on the plains of the Jordan.

PROC. ZOOLOGICAL SOCIETY.—1872, No. XX.

THOMISUS CLAVIGER, sp. nov.

Female adult, length $1\frac{1}{2}$ line.

This species resembles *T. rigidus* in general colouring and appearance, but it is a darker Spider; the legs are stronger and more spiny, some of the spines on those of the first and second pairs issuing from distinct and strongish tubercles. Like *T. rigidus* it has the abdomen and cephalothorax furnished with clubbed bristly hairs; these are much more abruptly clubbed than in either *T. rigidus* or *T. claveatus*; the cephalothorax is also shorter and more elevated in the thoracic region; and the abdomen projects more over its base. A good specific character is also furnished by the *sternum*, which is of a deep brown colour, marked on its fore part with a more or less strong and somewhat angular crescent or border of yellow.

An adult female was found on the plains of the Jordan, and another at Nazareth, under stones.

THOMISUS RECTILINEUS, sp. nov.

Female immature, length $1\frac{1}{2}$ line.

Although immature, I am inclined to think that this is a very distinct species, from the clearness and peculiarity of the pattern on the abdomen.

The *cephalothorax* is glossy, and, though of the ordinary form, has but little lateral constriction at the caput; the usual indentations are also nearly imperceptible; the colour of the cephalothorax is a uniform deep yellow-brown, with a distinct and clear, but narrow, yellow-white margin. The *legs*, the two first pairs of which are long and strong, are furnished with hairs, bristles, and spines, and (as also are the *sternum*, *maxillæ*, and *labium*) are of a dull yellow colour. *Abdomen* with five transverse white stripes across its hinder half; the foremost of these stripes is broken in the middle and of a very slightly angular form; the rest are straight (or in some examples very slightly curved) and decrease in length with the decreasing breadth of the abdomen. Both the cephalothorax and abdomen are thickly furnished with erect bristles.

Several examples were found on low-growing plants near the mouth of the Dog River (Nahr el Kelb) near Beirût.

THOMISUS DIANA, Savign. Egypte, Arachn. p. 161, pl. 7. fig. 1.

Adults of both sexes of this pretty species were found on low-growing plants on the plains of the Jordan near Jericho; it was also found in various localities and in similar situations in Egypt in 1864.

THOMISUS ROTUNDATUS, Walck. Ins. Apt. i. p. 500.

Adults and immature examples of both sexes were not unfrequent on plants and flowers at Jerusalem, Nazareth, Jericho, and in other localities.

THOMISUS FLORATOR, sp. nov.

Male adult, length $2\frac{1}{4}$ lines.

This very distinct and fine species is of the ordinary *Thomisiform* shape, and belongs to the same group as the two foregoing species.

The *cephalothorax*, whose profile is strongly and evenly rounded, is broad in front, with but slight lateral impression at the caput; and the ordinary indentations are almost imperceptible; it is furnished with a few longish, but not very strong, prominent bristles. It is glossy, and of a deep and almost jet-black colour, with a slight brownish tinge.

The *eyes* do not differ much in size; those of the hind central pair (which are, perhaps, the smallest of the eight) are distinctly wider apart than those of the fore central pair. The *legs* are of the deepest rich black-brown, the tarsi, metatarsi, and tibiæ being each annulated with one yellow ring; they are furnished with hairs, bristles, and not very strong spines; those of the first and second pairs are long and moderately strong. The *falces* (which are of a strong conical form and prominent at their base in front), with the *maxillæ*, *labium*, and *sternum*, are of a deep brown, approaching black.

The *palpi* are short and of a deep red-brown colour; the radial joint is of the same length as the cubital, and has its outer extremity produced into a strong apophysis; this apophysis has its extreme point bifid; and beneath the joint is another strong apophysis. The *palpal organs* are not very highly developed or complex; a strong circularly coiled spine surrounds them; this spine is not in contact with the margin of the digital joint as in many other species of *Thomisus*, but is free and separate from it.

The *abdomen* is oval, moderately convex above, and projects over the base of the cephalothorax; it is thinly furnished with bristly hairs, and is of a dull but deep black colour; and on the upperside are two large, conspicuous, pointed, oval yellow-white spots, placed transversely, and each somewhat obliquely, across the middle; some obscure rust-red markings are faintly visible between these spots and the spinners, but no pattern is discernible; possibly some variety exists in different examples in respect of the abdominal markings and depth of colouring.

A single example was found running on the ground at Jerusalem. It resembles more nearly some very dark examples of the male of *T. rotundatus* than any other species known to me; but the structure of the palpi and palpal organs distinguish it at once from that species.

THOMISUS BUFFONII, Savign. Egypte, Arachn. p. 164, pl. 6. fig. 10.

An adult male and females of this remarkable Spider were found on bare spots on the ground at Jerusalem and on the plains of the Jordan.

THOMISUS SETIGER, sp. nov. (Plate XIV. fig. 15.)

Male adult, length $2\frac{1}{2}$ lines.

In its size, general colouring, and the very peculiar armature of the whole Spider, with long pale-coloured spiny bristles and hairs, this species is closely allied to, and nearly resembles, both *Thomisus*

buffonii (Savign.) and *T. hirtus* (Koch); but it may be distinguished at once from the former by its longer legs, more thinly disposed bristly armature, and also by the genua and fore extremities of the tibiæ and metatarsi of the first and second pairs of legs being of a bright brownish red colour. From both these species it may be distinguished by the structure of the palpi: in the present species the radial joint, which is stouter than the cubital, has two long strong apophyses from its extremity; one, on the outer side, widens and is bifid at its extremity; the other, beneath, is simple but broader and rounded at its extreme point: the palpal organs are simple and have a long strong black spine coiled round them; the digital joint is angularly prominent or pointed on the middle of the outer margin.

The *cephalothorax* is yellow narrowly margined with white, and has two longitudinal reddish yellow-brown bands, between which, along its central line, is a white bar or line; these colours are not very strongly defined.

The *abdomen* is whitish mixed with yellow, and with two indistinct longitudinal bands of a brownish-yellow colour along its upperside; in some examples these are broken into spots or patches; the sides are longitudinally rugose, and the prominent portions of the wrinkled surface are shown by white lines. The abdomen of *T. buffonii* in all the examples met with was unicolorous.

Of the present distinct and interesting species three adult males were found on the ground in barren places near the sea at Beirût. The peculiar clothing of long pale spines and bristles affords an evident protection to this and the preceding species, making them look exactly like bits of coarse fleecy wool, or the rough seeds of some plant or other; had I not observed them moving, they would probably have escaped notice.

THOMISUS LATERALIS, Koch, Die Arachn. iv. p. 43, pl. 120. fig. 277.

Adults of both sexes were found among weeds and rubbish on the banks of the stream running through the plains of the Jordan from Elisha's Well. The males are exceedingly active.

THOMISUS ABBREVIATUS, Walck. Ins. Apt. i. p. 516.

An adult male, and females both adult and immature, were found on plants and flowers at Jerusalem.

THOMISUS PERONII, Savign. Egypte, Arachn. p. 163, pl. 6. figs. 7, 8.

An adult female was found near Jericho.

THOMISUS SPINIFER, sp. nov. (Plate XIV. fig. 14.)

Male adult, length $1\frac{1}{4}$ line.

In general appearance, structure, and colour the male of this Spider nearly resembles that of *T. abbreviatus* (Walck.); the legs, however, are not nearly so long, and it may at once be distinguished by the

abdomen (which is generally of a uniform mottled yellowish hue) being of a more oval form, and both that and the cephalothorax (which has the central portion yellow and the sides yellow-brown) being furnished over the greater part of their surface with small but conspicuous tubercles, each of which is surmounted by a short, strong, pale-coloured spine. The *palpi* also differ very decidedly in their structure from those of *T. abbreviatus*; the radial joint instead of being produced at its outer extremity into a long, strong, and somewhat clavate apophysis, has merely two prominent spiny projections from near the middle of the outer side; the palpal organs are simple but prominent, and have a small acute corneous projection near their base on the outer side.

The *female* greatly exceeds the male in size; but the *cephalothorax* resembles that of the latter sex; its colour is yellow, the ocular prominences and face white, and there is a broad longitudinal deep yellow-brown band on either side. The *legs* are yellow, marked irregularly with cretaceous white and red-brown. The *abdomen* is strongly rounded behind, but has, towards the fore extremity of the upper part, on either outer margin, a short subconical prominence, marked in some examples with a conspicuous black dash or spot; the rest of the abdomen is of a pale whitish yellow, with occasionally some brownish markings on and beneath its fore extremity; some examples (chiefly immature) are destitute of all dark markings, whether on the cephalothorax, legs, or abdomen.

Adult males, and females both adult and immature, were found on low-growing plants and flowers on the plains of the Jordan. It was also met with in Egypt in 1864; and in a collection of Spiders received from Major Julian Hobson from Bombay there were numerous females which (speaking diffidently in the absence of any example of the male) I believe to be of this species.

Fam. PHILODROMIDES.

Genus PHILODROMUS (Walck).

PHILODROMUS THORELLII, sp. nov.

Male adult, length 2 lines.

This Spider is nearly allied to *Araneus formicinus* (Clerck) (*Thomisus rhomboicus*, Hahn), which it resembles in the general character of its markings, but may be easily distinguished by these being less distinct, by its smaller size and longer legs, which differ also (at least in the males) in their relative proportion, and by the absence of any apophysis at the outer extremity of the radial joint of the palpus.

In the *present species* the legs of the *second* pair (σ ad.), in *T. rhomboicus* those of the *fourth* pair are the *longest*. Also in *Philodromus thorellii* the dark lanceolate marking along the centre of the fore half of the upperside of the abdomen has two distinct prominent points on the margin of each side, while there are scarcely any perceptible points in that *P. rhomboicus*.

Adults of both sexes, as well as immature females, were found generally distributed throughout Palestine and Syria. The name conferred upon it is that of Dr. T. Thorell, Adj. Prof. Zool. Univ. Upsalæ, Sweden, a most able and hard-working araneologist.

PHILODROMUS ALBINI, Savign. Egypte, Arachn. p. 161, pl. 6. fig. 3.

Adult males of this species were found on the plains of the Jordan and also near Damascus.

Walckenäer has confused both this and the next species with *Araneus formicinus* (Clerck), from which they are perfectly distinct; both were found by myself in Egypt in 1864.

PHILODROMUS FABRICII, Savign. Egypte, Arachn. p. 161, pl. 6. fig. 4.

An adult male, with females both adult and immature, were found running on the ground at Jerusalem and near Jericho.

PHILODROMUS SETIGERUS, sp. nov.

Female adult, length $2\frac{1}{4}$ lines.

This Spider is very nearly allied to *P. thorellii*, but may be distinguished by the form of the characteristic central longitudinal lanceolate marking on the upperside of the abdomen: in that species this marking is acutely pointed behind; but in the present it is cut off transversely in a straight line, with a small projecting point at each corner of its extremity; the *abdomen* is also thinly but conspicuously furnished with short, strong, erect, semidiaphanous bristles or fine spines; the *cephalothorax* is yellow, with a broad deep-brown longitudinal band on either side, leaving a central and two marginal yellow bands, of which the central is the broadest, and has a long wedge-shaped marking faintly defined by brownish lines, which reach from the eyes nearly to the hind margin of the cephalothorax. The *legs* are moderately long, their relative length 4, 2, 3, 1; they are furnished with hairs and a few very fine spines, and are yellow in colour, with a faint brown marking and clouding here and there. The *abdomen* is oviform, and, as above remarked, is armed on its upperside with short strong pale bristles or fine spines; it is of a deepish yellow-brown colour above; and the fore half has along its middle a conspicuous oblong deep-brown marking, with a slightly angular point on either side about the middle, which is its broadest part; its hinder extremity is truncate, with a small point at each corner; this marking has its fore half defined by a yellowish marginal line; the hinder part of the upperside has several short oblique lateral yellowish bars, which run into the uniform yellow ground-colour of the sides; the sides have also a broad longitudinal patch or irregular band of black, on which one or two oblique yellowish bars are observable. The underside of the whole Spider is of a dull pale yellow colour. A single example of the adult female was found on the road leading from Nazareth to Mount Carmel.

PHILODROMUS MEDIUS, sp. nov.

Male adult, length $1\frac{1}{2}$ line.

In form, colour, and structure this species is closely allied to *P. aureolus* (Walck.) and *P. cespiticolis* (*id.*); but it is much smaller and generally paler in hue, and the cephalothorax has a conspicuous white patch (or rather double patch) at the hinder part of the caput.

The *abdomen* is truncate before, and less broad there than behind; the pattern on the upperside is similar; but it appears to be covered with punctures, and hence has a somewhat more mottled or spotted appearance than the species named; there are four red-brown depressed spots about the centre of the upperside, almost in a square; and on each side at the widest part behind is a rather conspicuous, though not large, deep-black-brown irregular spot, and some deeper-red-brown and white mottlings at the extremity of the abdomen on either side just above the line of the spinners; these spots and markings give a character very observable in all the examples met with; the underside of the abdomen is of a uniform, dull, but somewhat satiny white colour; and the rest of the Spider is yellowish.

The *palpi* have the radial shorter than the cubital joint; and the former has a very small pointed apophysis at its outer extremity, the point of the apophysis being in contact with a very slight prominent point at the base of the digital joint; the cubital joint has a single prominent black bristle on its upperside, while on the radial are two longer and stronger ones; the digital joint is rather narrow-oval in form, and not large: the palpal organs are neither highly developed nor complex; they are, in fact, very simple in structure, and present no marked tangible character. Some few examples were much darker than others, and thus in appearance were more similar to *P. aureolus*. The *legs* and *falces*, especially the latter, are thinly speckled with small deep-brown spots. The female is larger than the male, but does not differ, except in the greater obscurity of the colours and markings, one or two examples having the abdomen of an entirely unicolorous ashy white hue, faintly powdered or dusted with dark specks.

This pretty species is very active, and was found on the plains of the Jordan, at Nazareth, Cana-el-Jelil, Carmel, and Beirût, running on the ground, as well as on low shrubs and plants.

Genus SPARASSUS (Walck.).

SPARASSUS WALCKENAËRIUS, Savigny, Egypte, Arachn. p. 159, pl. 6. fig. 1.

Immature examples of both sexes of this fine large Spider were found frequently under stones in various localities. It was also frequent in Egypt in 1864, and would occasionally be found on board the Nile boat (Dahabeah), where it was very useful in catching the Cockroaches with which the boat swarmed in some parts; but neither in Palestine nor in Egypt could I obtain an adult example of either sex.

SPARASSUS LINNÆI, Savigny, Egypte, Arachn. p. 160, pl. 6. fig. 2.

An immature female of what I believe to be this species was found under a stone near Jericho.

SPARASSUS ORNATUS, Walck. Ins. Apt. i. p. 583.

Undoubted examples of this Spider (♀), though all immature, were found at Beirût. From a well-marked adult male lately received from Switzerland, through the kindness of Dr. C. Collingwood, M.D., I feel convinced that this and the next are but varieties of one species.

SPARASSUS SMARAGDULUS, Walck. Ins. Apt. i. p. 582.

An adult female was found on the road from Mount Carmel to Cana-el-Jelil.

Genus HETEROPODA (Latr.) = *Olios* (Walck.).

HETEROPODA KOCHII, sp. nov. (Pl. XIV. fig. 13.)

Male adult, length $6\frac{1}{2}$ lines; female adult, length 9 lines.

The *cephalothorax* (male) is short, very broad, compressed laterally forwards, and well arched above; the fore margin, looked at from above and behind, is somewhat rounded: its colour is yellow; and it is clothed with hairs of a rather paler hue, and among them are some longer and darker: the normal grooves and indentations are of a rather deeper colour: the profile of the caput and thorax, from the clypeus to the hind margin, forms an even arched line.

The *eyes* are in two curved lines on the fore part of the caput, the curves directed forwards: that of the foremost line, which is much the shortest, is very slight; that of the hinder one is considerable; so that the eyes of each lateral pair are widely separated from each other, the space between them being very nearly equal to that between each fore lateral eye and that one of the fore central pair furthest from it; those of this (fore central) pair are the largest of the eight; the rest are much smaller, but about equal to each other in size; those of the fore central pair are a very little nearer together than each is to the lateral on its side; and the interval between each of the fore centrals and the hind central opposite to it is equal to that between the former and the fore lateral on its side; thus the four central eyes form very nearly a square, the width being a very little less than the length; the space between the hind centrals is scarcely more than one half of that between each and the hind lateral on its side; the foremost row of eyes is situated very close to the lower margin of the cephalothorax, so that the height of the clypeus scarcely exceeds half the diameter of an eye of the fore central pair.

The *legs* are long and comparatively slender; their relative length is 2, 1, 4, 3; those of the second pair measure $21\frac{1}{2}$ lines in length, those of the first pair $15\frac{1}{2}$ lines; their colour is yellow, deepening gradually from near the thorax into a dark red-brown on the meta-

tarsi and tarsi; these two joints are densely clothed beneath with hairs, which form a kind of cushion, intended, no doubt, to give an equal facility of movement in running upon either smooth or rough surfaces; the rest of the joints are sparingly furnished with hairs and a few dark spines of various lengths.

The *palpi* are short and similar to the legs in colour, except the digital joint, which is dark brown tinged with reddish, and, besides some longish pale yellowish hairs, has the greater portion of its fore extremity covered with a dense oval-shaped mat of closely packed, short, sooty, mouse-coloured hairs; the radial joint is less strong than the cubital, and has its outer extremity produced into a large prominent bifid apophysis, the front limb of which is the smaller and two-pointed, the hinder one large and quadrate; the digital joint is of a long narrow-oval form, and its length equals that of the radial and cubital together; the palpal organs are of a deep red-brown colour, well developed, but not very prominent or complex.

The *falces* are rather long and very strong, they project a little forwards, and are rather prominent in front; their colour is yellow-brown, deepening towards the fangs, which are strong and of a rich red-brown colour. The *maxillæ* are moderate in length, broad, enlarged and rounded at their extremities, and in the male slightly inclined to the labium; in the female they are parallel to each other.

The *labium* is short, broad, and rounded at the apex, which, with the extremities of the *maxillæ*, are of a pale whitish-yellow colour, the rest being of a reddish yellow-brown. The sternum is broad, heart-shaped, and its colour is yellow.

The *abdomen* is short-oval, very convex above (in the female it is almost globular), and furnished sparingly with pale hairs, and a few longer dark hairy ones intermixed; its colour is yellow, with a longitudinal central fusiform band of a paler hue on the fore half of the upperside; this is followed towards the spinners by some very indistinct palish angular lines or chevrons; on either side of the extremity of the fusiform band is a dark brownish dot or spot. In the adult female the legs were shorter; and those of the fourth pair differed in the relative lengths of their joints, and were more nearly equal to those of the second pair than in the male; the femora of the fourth pair were visibly longer than those of the second pair, while in the male the difference was considerably the other way; the spinners were short and compactly grouped.

An adult male and female of this fine Spider, which I have named after my kind friend Dr. L. Koch of Nürnberg, were captured under stones beneath the walls of Jerusalem; and in a similar situation near Jericho an immature female was found.

It differs from any other species of the genus known to me, in the wide separation of the eyes of the lateral pairs; the form of the abdomen is also peculiar; it is probably a very active Spider; but those met with stood resolutely upon the defensive, and made a strong resistance against being captured.

Genus SELENOPS (Dufour).

SELENOPS OMALOSOMA, Dufour, Ann. Sc. Phys. 1820, p. 7, pl. 69. fig. 4.

An immature female of a *Selenops* which I believe to be of this species was found under a stone at Jericho.

Fam. SPHASIDES.

Genus PASITHEA (Bl.).

PASITHEA VIRESCENS, sp. nov.

Female immature, length $2\frac{1}{2}$ lines.

This species is closely allied to *P. viridis* (Bl.), as well as to *P. pulchra* (id.). It resembles them in form and structure, but differs from both in its markings.

The *cephalothorax* is of a dull yellowish-green colour, with some dusky lines and markings, showing the normal indentations; the ocular area is strongly tinged with carmine-red, and is clothed with pale hairs and a few bristles; from each eye of the foremost pair an oblique dusky line runs to the falces, but is not continued upon them (at least it was not in the examples met with; but there may be a variation in some individuals in this respect).

The *legs* are moderate in length and strength, their relative length is 1, 2, 4, 3; and they are furnished with hairs and long spines; they are of a bright yellow colour, spotted and irregularly annulated with bright carmine-red. The *maxillæ* and *labium* are similar in colour to the cephalothorax; and the *sternum* is green.

The *abdomen* is of a bright apple-green colour, with a deeper-green central, longitudinal, tapering band on its fore part, emitting fine lateral oblique lines; it is thickly mottled and spotted with white on the upperside; and some of the larger white spots are arranged somewhat symmetrically in irregular transverse curved rows; and, when captured, the whole of the upper surface was sprinkled thinly with minute crimson spots; these, however, have since faded away.

Immature examples of the female of this showy and strikingly handsome Spider were found in irregular snares on low-growing plants at the upper end of the valley of Hinnom, Jerusalem.

Genus OXYOPES (Latr.).

OXYOPES GENTILIS (Koch).

Adults of both sexes of this species were found near Jericho, at Nazareth, and also near Beirût.

OXYOPES LINEATUS, Walck. Ins. Apt. i. p. 375.

Adult males, and females both adult and immature, were found at Jerusalem and Jericho.

OXYOPES SOBRINUS, sp. nov.

Male adult, length $2\frac{1}{2}$ lines.

In its general colours and their distribution, especially on the abdomen, this species resembles *O. gentilis* (Koch) and *O. variegatus* (Hahn); but it may be distinguished by its rather larger size and more robust form, as well as by the colours being darker, and their less variegated appearance.

The *cephalothorax* has the sides of a deep black-brown colour, somewhat veined and mottled with yellow; the longitudinal central band is yellowish, thinly clothed with white hairs, and it continues in the form of a narrow bar between the two hind central eyes; the *falces* are similar to the sides of the cephalothorax in colour; and the *legs*, which are furnished with spines (some exceedingly long), are yellow, thinly marked or irregularly annulated with dark brown, the greater portion of all the femora being brownish black.

The *palpi* have the radial joint very slightly produced both above and below at its extremity; the digital joint is stouter, and not so elongated at its extremity as in the two other species mentioned above; it is also prominent in an obtusely conical form at its base on the outer side—a character which at once distinguishes it from those species, and allies it nearly to *O. italicus* (Walck.), from which, however, it is decidedly distinct in its markings and also in some points of structure; it is, moreover, smaller, and has the digital joints of the palpi also smaller, and the prominence at their base on the outer side far less strongly developed.

A single adult male was found on the plains of the Jordan.

OXYOPES OPTABILIS, sp. nov.

Male adult, length $3\frac{1}{2}$ lines.

This Spider is similar in size, general colouring, and appearance to *O. lineatus* (Walck.), but may be at once distinguished by the structure of the radial joints of the palpi; in place of the long, broad, and flattened apophysis issuing from the base on the outer side of the radial joint in *O. lineatus*, the present one has (issuing from the same part) a strong but very short, though prominent, hollow apophysis, with an angular point at its extremity and one near it on each side; the apophysis also beneath the extremity of this joint is stronger; and in colours and markings the *clypeus* and *falces* differ a little, being entirely of a uniform brown-black colour; the ocular area also appears to be larger.

An adult male of this species was found on the Jordan plains. It is an interesting one, because it so nearly resembles *S. lineatus*, and yet differs so strikingly in the points above noticed.

Fam. LYCOSIDES.

Genus LYCOSA (Latr.).

LYCOSA (TARENTULA) GRISEA, Koch, Die Arach. xiv. p. 161, pl. 497. fig. 1386.

Adult and immature females of this Spider were found generally distributed.

LYCOSA (TARENTULA) APULIÆ, Walck. Ins. Apt. i. p. 281.

Adult and immature females were found at Jericho, on the plain of Esdraelon, and at Beirût.

LYCOSA (TARENTULA) NARBONNENSIS, Walck. Ins. Apt. i. p. 282.

A male and females immature of this fine *Lycosa* were found at Jerusalem and on the plains of the Jordan.

LYCOSA TRUCIDATORIA, Walck. Ins. Apt. i. p. 311.

An immature male, and females both adult and immature, were found on the Jordan plains and at Beirût.

LYCOSA SAGITTATA, Koch, Die Arachn. xiv. p. 177, pl. 499. fig. 1395.

An adult male and females of this distinctly marked Spider were found at Jerusalem.

LYCOSA NIGRA? Koch, Die Arachn. xv. p. 13, pl. 508. fig. 1423-24.

An adult male and females were found on the road from Hasbeiya to Damascus.

LYCOSA PROXIMA? Koch, Die Arachn. xv. p. 53, pl. 517. fig. 1453-54.

An adult male and females of this species were found on the plains of the Jordan.

LYCOSA CAMBRICA?, Bl. Brit. and Ir. Spid. p. 32, pl. 2. fig. 14.

An adult female of what I cannot distinguish from *L. cambrica*, (Bl.) was found among water-weeds on the banks of the stream flowing from Elisha's Well on the Jordan plains.

LYCOSA PIRATICA, Bl. Brit. and Ir. Spid. p. 34, pl. 2. fig. 16.

An adult male and immature females of this Spider, which I cannot distinguish from the species to which it is here referred, were found among water-weeds on the banks of the stream issuing from Elisha's Well near Jericho.

LYCOSA ALBIMANA, Koch, Die Arachn. xiv. p. 202, pl. 504. fig. 1411-12.

Adults of both sexes of this easily recognized Spider were met with in similar situations to those of the last two species, both near Jericho, on Mount Carmel, and the Lebanon.

LYCOSA DISSONANS, sp. nov.

Male adult, length $2\frac{1}{4}$ lines; female adult, 3 lines.

This very distinct Spider appears to be intermediate between *L. picta* (Hahn) and *L. cambrica* (Bl.), but is smaller than either. It resembles them in the form of the cephalothorax, which is rather pointed before, and has a somewhat blunt conical protuberance near

the margin close above the falces and below the two fore central eyes; the ocular area is smaller than in other groups of this genus.

The *cephalothorax* is of a uniform deep rich brown colour, almost approaching to black in front, glossy and totally devoid of pubescence; in which (if this be not accidental) it differs from both the other species mentioned. The *eyes* are in the ordinary position; the line formed by those (4) of the front, or lowest, row is longer than that of the row (2) above it; and its two central eyes are slightly further from each other than each is from the lateral on its side.

The *legs* are moderately long and strong; their relative length is 4, 1, 2, 3, but they do not differ greatly in this respect; they are of a bright yellow colour, the femora strongly suffused with reddish brown, and are furnished with hairs and black spines.

The *palpi* are yellow; the radial and cubital joints are of about equal length; the digital is small, of the ordinary form, and rather less in length than both the former together; the palpal organs are simple. The *falces*, *maxillæ*, *labium*, and *sternum* are similar to the cephalothorax in colour, the falces being of the darkest hue.

The *abdomen* is yellow and black, distributed in a very well-defined bold pattern on the upperside, resembling that of *L. picta*, but better defined, more continuous, and devoid of the red-brown which, with other colours, is conspicuous in that species; the underside in the male is marked with black spots and markings; but these do not exist in the female, which in other respects resembles the male. It differs characteristically both from *L. picta* and *L. cambrica* in being destitute of markings or annulations on the legs.

An adult and immature females were found in moist places near the stream on the plains of the Jordan; an adult male in a similar situation at Beirût; and another adult female at Damascus.

LYCOSA EJUSMODI, sp. nov.

Male adult, length 2 lines.

In form, colours, and general markings this Spider is closely allied to *L. exigua* (Bl.), *L. monticola* (Koch), *L. obscura* (Bl.), and others, from all of which, however, it is decidedly distinct, differing, when compared with them, both in the pattern on the abdomen and in the structure of the palpal organs.

The *cephalothorax* is of a deep brown colour, the ocular area nearly black, and from close behind the eyes a narrow yellow band, pointed at each end, runs to the hinder margin; there is also a short black longitudinal line within this band, marking the thoracic junction, and above the margin on either side is another broken lateral band; the clypeus has a yellowish hue. The *eyes* are in the ordinary position; the line formed by the four small foremost eyes (which are of equal size) is shorter than that of the second row (two eyes); that of the third row (two largest eyes) is the longest; and the two centrals of the foremost row are further from each other than each is from the lateral eye on its side. The *legs* are moderately long and strong; their relative length appeared to be 4, 3, 2, 1 (which is unusual); there is but little difference between those of the

first and second pairs; they are of a dull yellow colour, furnished with hairs and spines, and very faintly banded with dusky brown.

The *palpi* are of a dull yellow colour, furnished, but not so densely as *L. exigua* and others, with blackish hairs; the radial joint is rather stronger, though but slightly, if at all, longer than the cubital; the digital joint is small and of an elongate-oval form; the palpal organs are well developed but not very complex, and present no prominent spine. Nothing, however, but a magnified figure can give a distinctive idea of these, or, indeed, scarcely of those of any other species of *Lycosa*. The *falces* are of a yellowish or yellow-brown colour; the *sternum* brownish, with an elongate central yellow patch.

The *abdomen* is of a narrow oviform shape; the narrow normal *Lycosa* (or fusiform) marking on the fore part of its upperside is yellow margined with dark black-brown, and pointed at its hinder extremity; on either side of this extremity is a spot, or small yellowish patch, to which there succeeds a series of transverse, barely angulated bars, each composed of a double spot or short stripe of yellow; this series reaches to the spinners, where the bars become very short and almost confluent; the first four or five (larger ones) have a blackish spot at either extremity; the sides and underside are yellowish, the former spotted with dark brown.

Two examples, presenting no variety, were found on the skirts of Mount Hermon, near Rûkleh.

LYCOSA DESERTA, sp. nov.

Male adult, length $2\frac{1}{2}$ lines.

This Spider cannot be better described, in respect of form, colours, and markings, than as a small, pale, washed-out but spotty-looking variety of *L. picta*, from which, however, it is certainly distinct, and may be readily separated by the structure of the palpal organs; these are rather simple, and are traversed transversely and rather obliquely from the middle of their inner to near their outer margin by a fine sharp-pointed dark red-brown spine; this spine does not exist in the palpal organs of *L. picta*. The characteristic markings on the abdomen are chiefly indicated by small black spots on a pale yellow and whitish ground. The *legs* are regularly and distinctly spotted with black on a yellow ground.

Examples of both sexes in the adult state were found on desert spots near Damascus.

LYCOSA EFFERA, sp. nov.

Male adult, length $4\frac{1}{2}$ lines.

This Spider is similar to *L. grisea* (Koch) in size, colour, and markings; but in all the examples met with the legs were immaculate, whereas in *L. grisea* all the examples had the legs more or less distinctly banded. Of this latter species, however, I did not obtain an adult male.

The *eyes* are in the ordinary position, the lowest row, formed by the four smallest eyes, is longer than the row above, which is composed of the two *largest* eyes; the two centrals of the lowest row

are larger than the laterals, from which they are separated by a wider interval than that which separates them from each other.

The *palpi* have the radial and cubital joints very nearly of equal length; the former has a small red-brown rather obtuse pointed corneous-looking apophysis at its outer extremity near the upperside; the *digital* joint is longer than both the radial and cubital together; the palpal organs are well developed, and rather more complex than those of species of this genus in general, presenting various corneous prominences and spines.

The *legs* are furnished with hairs, bristles, and spines; the tarsi and metatarsi of the first two pairs have a tolerably dense brush of hairs throughout their length.

Examples of both sexes, adult and immature, were found at Jericho, Hebron, the Lebanon, and Beirût.

LYCOSA FIDELIS, sp. nov.

Male adult, length 3 lines.

This handsome and distinctly marked species belongs to the *L. picta* group, though, from the larger ocular area, it approaches to *L. saccata* (Bl.).

The *cephalothorax* is somewhat pointed before, and without any strong lateral constriction at caput; it is of a deep rich black-brown and yellow colour, marked in the somewhat radiated fashion which characterizes the *Lycosæ* of this group; in some examples the cephalothorax is so dark as to present no markings, and in all the specimens the markings are much obscured by a clothing of dull yellow or yellow-grey hairs. The *eyes* (for a *Lycosa*) are small; the centrals of the lower row are rather larger than the laterals, and are considerably further from each other than each is from the lateral on its side; the length of this lower row is less than that of the row above it.

The *legs* are long, strong, and furnished with hairs and spines; their relative length is 4, 1, 2, 3; they are conspicuously banded with yellow and deep black-brown, and are clothed in parts with grey or whitish-yellow pubescence, especially on the femora. The *falces*, *maxillæ*, *labium*, and *sternum* are of a deep black-brown colour. The *palpi* are moderately long and strong; the humeral joint (except the portion close to its extremity) is deep black-brown; the cubital is shorter than the radial joint; both are of a clear yellow colour; the latter, as also the base of the digital joint, is thickly clothed with bright white hairs, contrasting strongly with the black digital joint, which is large and broad, becoming somewhat abruptly narrowed and pointed at its fore extremity; the palpal organs are prominent and highly developed, consisting of various strong, prominent, corneous spines and processes.

The *abdomen* is black, or black-brown, thinly clothed with yellowish-grey hairs; the normal pattern on the upperside is more or less strongly defined by various larger or smaller blotches or patches of a somewhat dull orange-yellow colour regularly disposed, each blotch being distinctly but thinly spotted with small black dots,

which generally follow the linear direction of the several blotches; the underside is deep brown, faintly marked with longitudinal lines of yellowish spots; in immature examples the underside is yellow.

Adult and immature males were found near Jericho and also at Beirût. In 1864 it was found abundantly near Cairo, Egypt; and I have received numerous examples from Major Julian Hobson from Bombay.

Genus CTENUS (Walck.).

CTENUS SYRIACUS, sp. nov.

Female immature, length 2 lines.

The *cephalothorax* is of the ordinary Lycosiform shape, though rather flat and level in the profile-line of its upper surface; it is of a dull orange-yellow colour, with a broadish irregular margin and two broad longitudinal bands of brown, leaving a narrow yellow central band, with a still narrower lateral one of the same colour on either side. Across all these bands the directions of the normal indentations are indicated by darker lines.

The *eyes* are very unequal in size; four large dark-coloured ones form a strongly curved row on the upper fore margin of the caput, the curve being directed forwards; very close in front of, but not quite contiguous to, each lateral eye is a much smaller whitish-coloured one; and in front of each of the two centrals, close to the margin of the clypeus, is another small eye; these last two forming with the centrals of the curved row a quadrilateral figure, whose fore side is much the shortest.

The *legs* are strong and moderately long; they are of a yellow colour, and are furnished with hairs and spines, some of these last forming a well-defined double series on the undersides of the tibiæ and metatarsi of the first and second pairs. The *palpi* are similar to the legs in colour. The *falces*, *maxillæ*, *labium*, and *sternum* are also of the same colour, the falces being marked irregularly in front with dusky brownish markings.

The *abdomen* is of an oblong-oval form, and its colours are yellow and brownish black, forming the following very distinctly defined pattern:—a broad longitudinal, central, strongly dentated yellow band, having the appearance of a series of united triangles, each truncated at its vertex; within the fore part of this band are two indistinctly defined blackish longitudinal lines converging to a point backwards; the sides are marked with alternate narrow dentated oblique blackish and yellow stripes; the underside is yellow, with a few small irregular blackish spots or markings near the margins.

A single example was found on the plains of the Jordan. The occurrence of this Spider in Palestine is interesting, as being one of the few proofs of an approach to tropical forms of *Araneidea*.

Genus DOLOMEDES (Latr.).

DOLOMEDES CONSOCIUS, sp. nov.

Male and female adult, length from 5 to 6 lines.

In size, form, and colours this Spider resembles *D. mirabilis* (Clerck), from which the chief and most tangible distinctive character that I have been able to detect in the preserved specimens is the formation of the radial joints of the palpi (♂). In *D. mirabilis* the radial joint has at its outer extremity a small apophysis gradually tapering to a fine and somewhat crooked point; in the present species this apophysis is replaced by one longer, and broad throughout the greater part of its length, when it rather abruptly goes off into a fine curved point; the form of the genital aperture in the female is also slightly but distinctly and constantly different from that of the female of *D. mirabilis*. In respect of colour and markings, there seems to be a similar and as great variety as in that species.

An adult male and several females were found on low-growing plants on the plains of the Jordan, an adult male at the foot of the Lebanon near Ain-Ata, and adult and immature females on the plain of Esdraelon. Not having detected in Palestine the European form *D. mirabilis*, it has occurred to me that that species may be replaced there by the present nearly allied but distinct form.

Fam. SALTICIDES.

Genus SALTICUS (Latr.).

Attus (Sim.).

SALTICUS SANGUINOLENTUS, Walck. Ins. Apt. i. p. 473.

An adult male of this fine and strikingly coloured Spider was found at Kefr Menda, near Cana-el-Jelil.

SALTICUS HÆMORRHOICUS, Koch, Die Arachn. xiii. p. 54, figs. 1121-1123.

Adults of both sexes of this species were found near Ain-Ata, on the skirts of the Lebanon. Although exceedingly similar to the foregoing, it is yet very distinct on comparison. It appeared to be a common Spider in this, the only locality in which I met with it.

SALTICUS CASTANEUS, Sim. Monogr. des Esp. Europ. des Attides, Ann. Soc. Ent. Fr. tom. viii. 4^e sér. 1868, p. 31.

An adult female found at Beirût.

SALTICUS CEPHALOTES (Sim.).

Adults and immature examples of both sexes of this brightly coloured and pretty species were found in various localities, principally on the plains of the Jordan and at Jerusalem. I also met with it subsequently at Corfu; and it has been found by M. Simon in Spain. It is an exceedingly active Spider.

SALTICUS DIAGONALIS, Sim. Monogr. Ann. Soc. Ent. Fr. tom. viii. 4^e sér. 1868, p. 46.

An adult female found at Jerusalem.

PROC. ZOOL. SOC.—1872, No. XXI.

SALTICUS LÆVIGATUS, Sim. Monogr. Ann. Soc. Ent. Fr. tom. viii. 4^e sér. 1868, p. 51.

An adult male and female on the skirts of the Lebanon.

SALTICUS ALBOBIMACULATUS, Luc. Explor. de l'Algér. Arachn. p. 170, pl. 8. fig. 10.

An adult and an immature female on the plains of the Jordan near Jericho.

SALTICUS OSTRINUS, Sim. Monogr. Ann. Soc. Ent. Fr. tom. viii. 4^e sér. 1868, p. 52.

An adult male at Jerusalem.

SALTICUS QUINQUEPARTITUS, Walck. Ins. Apt. i. p. 403.

An adult female on the skirts of Mount Hermou, near Rûkleh.

SALTICUS MONARDI, Luc. Explor. de l'Algér. Arachn. p. 156, pl. 7. fig. 2.

An immature male on the plains of the Jordan.

SALTICUS CAPREOLUS, L. Koch, Verh. zool.-bot. Wien, 1867, p. 872.

Adults of both sexes at Jerusalem.

SALTICUS CANDIDUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. tom. viii. 4^e sér. 1869, p. 70.

An immature female at Beirût.

SALTICUS AFFINIS, Luc. Explor. de l'Algér. Arachn. p. 161, pl. 7. fig. 4.

An adult female found on the plains of the Jordan.

SALTICUS ARENICOLOR, Sim., = *Attus mustellatus*, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. tom. viii. 4^e sér. p. 530 ; also vide *ib.* p. 723 ; et vide *Attus æruginosus*, Sim. Suppl. à la Monogr., Ann. Soc. Ent. Fr. 1871, p. 154.

An adult male on the road from Damascus to Beirût.

SALTICUS LATIFASCIATUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. tom. viii. 4^e sér. p. 536, pl. 5. fig. 19. (Plate XIV. fig. 18.)

Adults of both sexes on stone walls and rocks, at Hasbeiya and Beirût.

This well-marked species was named and described by M. Simon from examples captured by myself (subsequently to the capture of those in Palestine and Syria) in Corfu, where it was not unfrequent on a wall by the roadside leading from the town to the One-gun Battery.

SALTICUS FASCIATUS, Hahn, Die Arachn. i. p. 54, pl. 14. fig. 41.

Adults of both sexes were found at Jericho and Jerusalem. All

the examples were much larger than European ones of the same species; but M. Simon is of opinion that they are identical with the European form.

SALTICUS LINEATUS, Koch, Die Arachn. xiv. p. 43, pl. 474. fig. 1303.

An adult male on the plains of the Jordan.

SALTICUS FULVASTER, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. tom. viii. 4^e sér. p. 556.

An adult female on the plains of the Jordan; described by M. Simon from European examples since the capture of the above in Palestine.

SALTICUS BRESNIERI, Luc. Explor. de l'Algér. p. 154, pl. 7. fig. 8.

An adult female on the plains of the Jordan.

SALTICUS SEMIATER, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. t. viii. 4^e sér. p. 584.

An adult female at Hasbeiya.

SALTICUS CANESCENS, Koch, Die Arachn. xiii. p. 80, pl. 445. fig. 1144.

An adult female on the plains of the Jordan.

SALTICUS GAMBOSUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. t. viii. 4^e sér. p. 593, pl. 6. fig. 7. (Plate XIV. fig. 21.)

Adults of both sexes in various localities throughout Palestine.

SALTICUS PAYKULLII, Sav. Egypte, Arachn. p. 409, pl. 7. fig. 22.

An immature female on the plains of the Jordan.

SALTICUS VAILLANTII, Luc. Explor. de l'Algér. Arachn. p. 136, pl. 5. fig. 2.

An adult male of this fine Spider on a prickly pear at Beirût.

M. Simon has lately (Ann. Soc. Ent. Fr. 1871, p. 359) included this species as a synonym of *S. paykullii* (Sav.); but I cannot find any remarks upon it in the page referred to in the index (p. 359).

SALTICUS MULTIPUNCTATUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. t. viii. 4^e sér. p. 606.

An immature female at Nazareth.

SALTICUS REGILLUS, L. Koch, Verh. zool.-bot. Wien, 1867, p. 879.

An adult male and immature females of this handsome Spider were found on the plains of the Jordan. I met with it in Upper Egypt in 1864, and also subsequently in Asia Minor, near Ephesus.

Plexippus (Sav.).

SALTICUS ADANSONII, Sav. Egypte, Arachn. p. 169, pl. 7. fig. 8.

An adult male was found in the Hotel d'Orient at Beirût. In 1864 I found several examples in my bedroom at the hotel at Alexandria, Egypt; and I have also received in abundance, both from Bombay and Ceylon, examples which I cannot distinguish from those found in Palestine and Egypt.

Callietherus (Koch, Sim.).

SALTICUS TENERUS, Koch, Die Arachn. xiii. p. 43, pl. 440. figs. 1112, 1113.

An adult male at Hebron.

SALTICUS TRICINCTUS, Koch, Die Arachn. xiii. p. 50, pl. 440. fig. 1117.

An adult female at Jerusalem.

SALTICUS INFIMUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. t. viii. 4^e sér. p. 661, pl. 7. fig. 2.

Adults of both sexes in various localities.

Menemerus (Sim.).

SALTICUS VIGORATUS, Koch, Die Arachn. xiv. p. 14, pl. 470. figs. 1282, 1283.

An immature male at Jerusalem. Lately M. Simon has included this species as a synonym of *Menemerus semilimbatus* (Hahn). *Vide* Suppl. Monogr. (Simon), Ann. Soc. Ent. Fr. 1871, p. 337.

Heliophanus (Koch, Sim.).

SALTICUS MELINUS, L. Koch, Verhandl. zool.-bot. Wien, 1867, p. 870.

Adults at Nain.

Salticus (Latr., Sim.).

SALTICUS TODILLUS, Sim. Monogr. Att. Eur., Ann. Soc. Ent. Fr. tom. viii. 4^e sér. p. 712. (Pl. XIV. fig. 19.)

Adults of both sexes under stones at Hûnin, Jerusalem, and in several other localities. I found this species also at Alexandria, Egypt, in 1864.

Attus (Sim.).

SALTICUS (RHANIS, Koch) *INSIGNIS*, sp. nov.

Adult male, length $1\frac{1}{2}$ line, breadth 1 line; cephalothorax and abdomen of equal length.

The group to which this Spider belongs is characterized chiefly by the great breadth of the Spiders which compose it compared with their length, the close fitting of the abdomen to the cephalothorax,

the general flatness of the whole Spider, and by the large size of the caput, which seems to monopolize almost the whole of the cephalothorax, so that the eyes occupy nearly the whole of its flattened upper area, and the hind slope, which is very abrupt, commences immediately behind the ocular area.

This group melts away insensibly into the more typical forms of the genus *Attus* (Sim.); but still in its chief representatives it is a well-marked group, though not generically distinct from other groups which have yet received the rank of genera from different authors.

This Spider is of a deep rich blackish red-brown colour, the thoracic region, clypeus, and sides of the caput being the lightest and clearest in their hue, and portions of the legs the darkest. It has but very few hairs, the integument being strong and somewhat coriaceous; the upper area, however, of the caput is furnished with some short whitish scale-like hairs. The cephalothorax and abdomen are of equal length; the latter fits over the base of the former very closely; and together they almost appear to compose an undivided animal of an oblong form; the shape of the cephalothorax is oblong, wider in the middle (at the hinder row of eyes) than at the extremities; at that point it has a subangular outline, and is there as wide as its whole length; the ocular area is much broader behind than before, its width before being just equal to its longitudinal diameter; the small eye on either side (forming the second row) is close to the lateral of the front row, and consequently is greatly removed from the eyes of the hinder row, and rather within the straight line formed by each of them and the lateral (on the same side) of the front row. The *legs* are moderately long; those of the first pair are much the longest, and have their femora, genua, and tibiæ inordinately strong compared with the rest; the genua and tibiæ are nearly of equal length, the latter being a little the longest; they are of a clear and bright yellowish red-brown; the legs of the second pair appeared to be the shortest; each tarsus terminates with a claw-tuft; the femora of the first pair are furnished with strong, black, spine-like bristles, the most conspicuous of which form a strong longitudinal fringe on the upperside, and another on the outer side; a similar fringe of less strong and conspicuous spiny bristles is also on the foreside of the tibiæ of the same pair, on which there are also numerous stronger ones beneath; while the metatarsi are furnished on their undersides with a double series of short strong spines.

The *palpi* are moderately long, and not very strong; the radial joint is short, and rather shorter than the cubital; the former has its outer extremity produced into a nearly straight, tolerably strong, and not very long nor very sharp, pointed apophysis, the length of which is not quite equal to that of the joint itself; the digital joint is equal in length to the radial and cubital together, it is of oval form, broadest behind; the palpal organs are well developed but simple in structure, and have a very prominent subconical corneous eminence rather towards their hinder extremity; the *falces* are vertical, strong and straight, and flattened in front.

The *abdomen* is of a rather flattened oval form, squared off in

front, and of a sharp pointed oval shape behind; it is glossy, of a deep blackish red-brown colour, with a few short pale squamose hairs on its upper surface.

A single adult male of this most interesting and distinct Spider was found under a stone at Hebron.

SALTICUS PUTUS, sp. nov.

Male adult, length $1\frac{1}{2}$ line.

In the large upper area of the caput this Spider shows a near approach to the group *Rhanis*; but the relative sizes of the cephalothorax and abdomen are different; the latter is smaller than the former, and of the ordinary oviform type, and does not fit on (as it were) to the cephalothorax; this is deep but flattened at the top; and the caput, although comprising a great portion of the cephalothorax, is yet proportionally not as large as in *Rhanis*; and the small eyes of the second row, instead of being close to the laterals of the front row, and so far more widely removed from those of the hinder row, are nearly equidistant between them.

The *cephalothorax* is black, and not very thickly clothed with yellowish squamose hairs; the upper part of the hinder slope has a short white bar, composed of white hairs. The *abdomen* is black-brown, pretty densely clothed with squamose hairs; there is a white marking, formed of white hairs, at the centre of the fore part of its upperside, and on either side of this white marking is a curved white bar; round the shoulders (as it were) of the abdomen there is also a small tuft of white hairs at its extremity on either side of the spinners; the underside is whitish, clothed with short adpressed hairs.

The *eyes* of the hinder row are wider apart than the length of the front row; and those of the second row are in a straight line (on either side) with the laterals of the front and hinder rows.

The *legs* are moderate in length and strength; they are of a yellow-brown colour, darker at the articulations of the joints, the metatarsi and tarsi being paler than the rest; they are furnished with hairs of various lengths; and the tibiae and metatarsi of the first pair, which are much longer and stronger than the rest, have some strong spines beneath them; the legs of the first pair, besides being longer and stronger than the others, are much darker in colour, being of a deep red-brown; the tarsi all terminate with a claw-tuft.

The *palpi* are neither very long nor strong; they are of a black-brown colour; the radial joint is shorter than the cubital, and has at its outer extremity a long, pointed, straight apophysis; the digital is rather large, and longer than the radial and cubital joints together; the palpal organs are well developed, but simple in form and structure.

A single adult male was found on short herbage among stones at Rasheiyah, on the skirts of Mount Hermon.

SALTICUS DELECTUS, sp. nov.

Male adult, length 2 lines.

In form and general structure this species is of the ordinary type.

The *cephalothorax* is of a deep shining black-brown colour, the caput black; it has a transverse stripe or band of white hairs immediately behind the front row of eyes, also a marginal stripe and a central longitudinal one of the same; this last stripe commences in a sharp angular point (in some examples this point is of a diamond-shape, owing to a constriction just behind its fore extremity) between the two eyes of the hinder row, and runs backwards beyond the beginning of the hind slope.

The *legs* are yellow, and are furnished with a few hairs and fine spines, those of the fourth pair are the longest, and those of the second pair the shortest; each tarsus ends with a small black claw-tuft. The *falces* are black-brown, moderately strong, rather long, and a little projecting. The *palpi* are short and black; the humeral joint has a rather prominent and somewhat pointed enlargement near its extremity on the inner side, very nearly approaching in the structure of this joint to Spiders of the restricted genus *Heliophanus* (Koch); the cubital is longer and stronger than the radial joint, and has its outer extremity prolonged into a strongish blunt-pointed apophysis; the radial is short and of a peculiar form, being so short as to have no linear dimensions on the outer side (which is sharp-pointed), and rather obtusely produced on the inner side forwards; the palpal organs are highly developed and very prominent at their hinder part, which projects backwards; they have a small prominent knob or protuberance on the hinder part of their lower surface. The *abdomen* is black; the upperside is divided from the lower by a lateral marginal stripe on either side of bright white hairs; and a similar central stripe divides it longitudinally; the former stripes are interrupted, or, rather, formed by a series of short white oblique lines or markings towards their hinder portions; the underside is dark brown, with two pale dull whitish and slightly curved longitudinal stripes.

The female resembles the male in the general character of the markings; but the central longitudinal white stripe on the abdomen has some lateral angular points, or short incipient lines, on either side of its hinder portion, in some examples resembling a series of short confluent chevrons; the lateral stripes also run round and meet on the fore margin of the abdomen. Different examples of the female vary in depth of colour.

Both sexes of this pretty *Salticus* were found actively hopping about among stones and short herbage on the plains of the Jordan.

SALTICUS DEVORANS, sp. nov.

Male adult, length from $2\frac{1}{2}$ to 3 lines.

This species is nearly allied, both in form, structure, and colours, to *S. paykullii* (Sav.) and *S. vaillantii* (Luc.), but may be easily distinguished by its much smaller size and by differences in the pattern formed by the distribution of its colour and markings. The present species has no dark marginal border or band on the cephalothorax, while both the other species mentioned have it; and in those species also this marginal band branches upwards in a

straight and almost vertical direction to the fore lateral eye on either side, dividing the side of the cephalothorax from the clypeus, while the whole of the sides of the cephalothorax, as well as the clypeus, in the present species is undivided by any such band; in one example only out of many there was a narrow black marginal line, and the clypeus was suffused with brown-black. From *S. vaillantii* it may be also distinguished by the central longitudinal yellow band on the cephalothorax stopping at the hinder row of eyes, while in that species it runs through the ocular area to the clypeus; it is also broader in general, though more sharply constricted transversely at the beginning of the hinder slope than in the two species mentioned. In one example of the present species there was a conspicuous roundish patch of white hairs near the centre of the ocular area, but quite separate and distinct from the central thoracic band.

The *palpi* in all three species are remarkably similar; in all the humeral joint has a conspicuous tuft of prominent hairs on the outer side near its extremity, but this is perhaps most conspicuous in the present species; the radial joint is slightly shorter than the cubital, and its outer extremity is produced into a tapering, sharp-pointed, moderately long apophysis; the digital joint is large, broad near its base, and rather constricted forwards; the palpal organs are prominent near their base, projecting backwards over the radial joint; and a filiform black spine curves round them, adhering closely to the inner edge of the digital joint.

The female is rather larger than the male, but resembles it in general colours and character.

Adult and immature examples of both sexes were found on walls, rocky banks, and among stones on the plains of the Jordan. An adult male was also met with at Rasheiya.

SALTICUS HELIOPHANOÏDES, sp. nov.

Male adult, length rather more than 2 lines.

This Spider is very closely allied to *S. delectus*, Cambr., *suprà*, nearly resembling it in general colours and markings, but distinguishable by the dark colour of the legs, which are mixed black and brown, especially those of the first pair, and by the absence of any longitudinal curved stripes on the underside of the abdomen, the underside being, in both examples found, of a vinous-brown colour, thinly clothed with short hoary hairs.

The *palpi*, while similar in the position and general character of the prominences &c. of the different joints, have all these more strongly marked and developed; and a similar observation applies also to the palpal organs. The resemblance, therefore, in this Spider to those of the *Heliophanus* group is more marked than in *S. delectus*.

An adult male was found on the road from Kedes to Banias, and another on the road from the Lebanon to Beirût: this last example is considered by M. Simon to be distinct from the former; but a careful examination of the palpi failed to show any structural differ-

ence. Besides the above differences from *S. delectus*, it is a slightly larger Spider.

SALTICUS EPULARIS, sp. nov.

Male adult, length $1\frac{3}{4}$ line.

This species is of ordinary form and structure; the *cephalothorax* is massive, and has the hind slope at some distance behind the hinder row of eyes and very abrupt; it is jet-black, with a narrow marginal border of white hairs, which runs also round the margin of the clypeus; a short broad stripe or band of white hairs also runs a little obliquely backwards from each eye of the hinder row, terminating a little below the commencement of the hind slope of the thorax. The minute eyes of the second row are nearer to the eyes of the first than of the hinder (or third) row; and these last form a rather longer transverse line than those of the first row.

The *legs* are moderately long and strong, their relative length being apparently 1, 3, 4, 2; those of the first pair are much the strongest, especially the femoral joints, which are of a deep rich blackish brown colour, the rest of the joints being dark yellow-brown, and the other legs a paler yellow-brown; they are furnished with white and other hairs (those on the first pair form fringes on the femora and tibiæ), also with fine black spines; and each tarsus ends with a small black claw-tuft.

The *palpi* are short and strong; the cubital joint is longer and stronger than the radial, and, together with the fore extremity of the humeral joint, is furnished above with white hairs; the radial joint has its outer extremity prolonged into a broad and obtusely pointed flattish apophysis, closely adhering to the digital joint and so not readily distinguishable; this last (digital) joint is large, but of ordinary form; the palpal organs are highly developed but simple in structure, and present no peculiar corneous complications.

The *abdomen* is of a deep brown colour above, divided longitudinally by a conspicuous central yellowish-white stripe or narrow band (this in one example was very slightly and finely dentated on the sides of its hinder portion); and two other similar lateral bands form a margin to nearly the whole of the abdomen, not, however, quite meeting in front; when looked at directly from above, these lateral stripes, being rather on the sides than on the upperside, are not distinctly seen; the sides and underside are of a yellowish-brown colour, thinly clothed with short white hairs.

This very pretty and distinct Spider was found among stones on a bare and wild spot near Hasbeiya.

SALTICUS SIMONII, sp. nov.

Male adult, length $1\frac{3}{4}$ line.

This Spider is of a shorter, stouter build than *S. epularis*, but is nearly allied to it, as well as to *Attus ostrinus* (Sim.); it may, however, be readily distinguished by its colours and pattern.

The *cephalothorax* is of a brownish-black colour, very narrowly margined with white hairs; and the caput is slightly furnished above

with yellowish-red hairs; the *eyes* of the front row are encircled with bright shining scarlet hairs; and a large, somewhat oblong, transverse spot or patch of pure white squamose hairs occupies the centre of the ocular area; also close behind each eye of the hinder row is another, much smaller white spot of the same nature.

The *legs* are brownish yellow, the femora of the first pair (which, like those of many other species of this group, have the femora, genua, and tibiæ inordinately strong) being blackish brown; their relative length appeared to be 1, 3, 2, 4; and they are furnished with hairs (those on the tibiæ and femora of the first pair forming longitudinal fringes), also with spines, and a claw-tuft at the end of each tarsus. The *falces* are of ordinary form, and of a red-brown colour, ornamented with longitudinal rows of white squamose hairs.

The *palpi* are short and rather strong; the cubital joint is furnished above with white hairs; the radial, which is shorter than the cubital, has its outer extremity produced into a strong and rather long but not very sharp-pointed apophysis, which curves upwards close by the side of the digital joint; this joint is of ordinary form, and contains the palpal organs, which are simple in structure.

The *abdomen* is of a short oval form, of a deep black-brown colour above, clothed with glossy scarlet hairs; a central longitudinal and somewhat tapering band clothed with white hairs begins a little way behind the fore margin, and ends just above the spinners; this band is finely dentated on its margins; the upperside is completely separated from the sides by a band of white squamose hairs, which runs round the fore margin (where it is broadest) as well as round the lateral margins; the portion of this marginal band or stripe nearest the spinners on either side is formed by a separate short stripe, which overlaps the inner portion; the sides are of a somewhat pale vinous-brown colour striated with lines of white squamose hairs; and a broad central longitudinal band of the same kind occupies the underside.

A single example of this very striking and pretty species was found among stones on the skirts of the Lebanon, near Ain-Ata.

I have much pleasure in connecting this Spider with the name of M. Eugène Simon, who has paid such great and careful attention to the family *Salticidae*.

SALTICUS PARTICEPS, sp. nov.

Male adult, length $1\frac{3}{4}$ line.

This Spider is closely allied to, but quite distinct from, *S. bresnieri* (Luc.). The *cephalothorax* is oblong, not so deep, nor the hind slope so abrupt as in many others of this genus; it is of a deep brown colour, the caput black; on the cephalothorax are four longitudinal white lines or stripes, one on either side a little above the margins, and continued in front close beneath the eyes, where it is formed by squamose hairs; another white stripe runs from each eye of the fore central pair backwards, close inside the eyes of the hinder row, quite to the hinder margin; these two stripes are narrower

than the laterals; round the eyes of the front row are some coarsish yellow-red cilia or hairs.

The *legs* are moderately long and strong, not differing greatly in length; their relative length is apparently 4, 3, 1, 2, or 4, 1, 3, 2 (it was difficult to say exactly which); they are of a yellow-brown colour deepening to dark brown black; those of the first two pairs are darker than the rest; the legs are furnished with hairs, spines, and a claw-tuft at the extremity of each tarsus.

The *abdomen* is of a deep blackish yellow-brown colour above, with three narrow longitudinal white stripes (a central, and a lateral one on either side); the sides are white; and the underside is almost wholly occupied by a broad longitudinal black band.

The *palpi* are short, moderately strong, and of a black colour; the cubital joint is clothed with white hairs on the upperside; and the radial is produced at its outer extremity into a short, strong, blunt-pointed apophysis, bifid at its extremity; the radial as well as the digital joint (which last is of ordinary form) are furnished with long bristly black hairs; and the extremity of the digital is also furnished with white hairs; the hairs on the radial joint make the apophysis at its outer extremity difficult to be seen readily. The palpal organs are well developed and prominent at their base, but simple in structure.

A single example was met with among stones at Jerusalem.

SALTICUS STANTONII, sp. nov. (Plate XIV. fig. 20.)

Male adult, length $2\frac{1}{4}$ lines.

This Spider belongs to a group of the genus *Attus* (Sim.) not yet, as far as I am aware, represented by any ascertained European examples. The group is characterized by a longer and more flattened form of cephalothorax and abdomen than is possessed by other groups of *Attides*. The *cephalothorax* is in itself short, and, when looked at from above, rather of a roundish oval form; its upper surface is flat, but the hind slope tolerably abrupt; it is of a deep rich brown on the sides with a black margin: the caput is black and encircled by a band of white hairs running round in front immediately beneath the eyes, and ending on either side near behind the eyes of the hinder row; at the centre of the back of the caput is a white spot similarly formed.

The *legs* vary a good deal in length; those of the second, third, and fourth pairs are short, those of the third pair apparently the shortest; they are yellow, furnished with a few hairs and small spines; those of the first pair are much longer than the rest and of inordinate strength, especially the femoral, genual, and tibial joints; they are of a deep rich brown colour; the tibial and metatarsal joints are furnished with short strong spines, each of which springs from a distinct tubercle; all the tarsi end with a strongish claw-tuft.

The *palpi* are short and not very strong; they are of a yellow-brown colour, the digital joint being the palest; the radial is shorter than the cubital joint, and has its outer extremity produced into a short, tapering, pointed apophysis, whose base adheres very closely

to the base (on the outer side) of the digital joint, its point being slightly curved and more prominent; the digital is of moderate size and ordinary form; and the palpal organs are neither very prominent nor complex. The *falces* are small, divergent, and placed back considerably behind the fore margin of the caput; the fangs have their bases greatly and abruptly enlarged. The minute *eyes* of the second row are equidistant between those of the first and third rows, but are inside the straight line formed by the laterals of those two rows.

The *abdomen* is of a long oval form, rather flattened above, and projecting over the base of the cephalothorax; it is of a dark brown colour tinged with yellow; in some young examples it was jet-black; its fore half is encircled with a marginal band or stripe of white hairs; and there are six small bright white spots (also formed by white hairs) on its upper surface; two of these spots are placed longitudinally on the centre of its fore half; the foremost of these two spots is sometimes obsolete; the other four are on the margins of the hinder half, and form a large trapezoid, whose fore side is much the longest; the underside is paler than the upper, and has an indistinct marginal line of white hairs on either side.

An adult male and two immature males were found among grass on the banks of the stream flowing from Elisha's Well through the plains of the Jordan. It is a very striking and distinct species; and it is with much pleasure that I confer upon it a name too well known in the entomological world to need any remark—that of my kind friend H. T. Stainton, Esq., of Mountsfield, Lewisham.

SALTICUS CONGENER, sp. nov.

Female adult, length $2\frac{1}{2}$ lines.

This Spider is closely allied to *S. staintonii*, of which, but for M. Simon's decided opinion to the contrary, I should have considered it to be the female. It differs from that species in having the cephalothorax dark brown, uniformly clothed with short greyish-white hairs; and the abdomen is of a pale dull yellow-brown, similarly but more thinly clothed, and striated and mottled obscurely with a paler yellowish colour; a series of angular lines or chevrons (of which the first is much stronger and more pointed than the rest) are indistinctly visible on the hinder half of the upperside; and also some pale blotches corresponding to the white spots in *S. staintonii*.

Three examples were found among grass and weeds on the plains of the Jordan.

SALTICUS PATAGIATUS, sp. nov.

Male adult, length $2\frac{1}{2}$ lines.

This species is of ordinary form and general structure.

The *cephalothorax* is massive; it projects considerably forwards over the falces; and the hind slope is exceedingly abrupt; the sides of the caput and the thoracic portion are of a deep shining reddish black-brown colour, and the upper surface of the caput black, margined on the sides and hinder part (behind the third row of eyes)

with a semicircular band of paler brown, clothed with white hairs; the *eyes* of the second row are equidistant from those of the first and third, and as nearly as possible in a straight line with the laterals of those rows.

The *legs* are moderately long and strong, and of nearly equal length and strength; they are of a deep reddish-brown colour, the tarsi pale dull yellow, and are furnished with hairs and fine spines, each tarsus ending with a claw-tuft.

The *palpi* are short and rather slender; the radial and digital joints are darker-coloured than the legs, the cubital and humeral joints being of a pale dull yellowish brown, furnished conspicuously with white hairs, as is also the extremity of the digital joint; the radial is shorter than the cubital, and has its outer extremity prolonged into a long and strong apophysis, gradually tapering to a sharp point; the digital joint is small but of ordinary form; the palpal organs are simple but prominent behind, and project considerably backwards beneath the radial joint.

The *abdomen* is of a short oval form, slopes rather quickly from its fore extremity, where it is high, to the spinners (when looked at in profile), and fits closely on to the hind slope of the cephalothorax; it is of a brownish-black colour, thinly clothed above with yellowish-red hairs; a strong crescent of white hairs margins the foreside; a little way behind this is a transverse yellowish-white curved bar, which spans the whole of the upperside; and this is succeeded by a close series of strongish angular bars or chevrons on the hinder half, on which there is also a curved longitudinal lateral stripe on either side, connected with the chevrons by a short bar or dentation of the lateral stripes; the sides and underside are striated with longitudinal lines of reddish hairs.

Two adult males were found at Tiberias, and an immature male near Nazareth, among dwarf plants on the waste between that and Mount Tabor. The pattern on the abdomen is less distinct in some examples than in others; and the lateral stripes are sometimes simply replaced by an oblique blotch or stripe. It is allied to *S. adansonii* (Sav.), but easily distinguishable by the larger size of the digital joint.

SALTICUS NEPOS, sp. nov.

Male adult, length 2 lines.

The *cephalothorax* is short and massive, but of ordinary form; it is of a yellow-brown colour, clothed with short yellowish hairs; a transverse somewhat crescent-shaped band of whitish hairs encircles the hinder part of the caput; the clypeus is furnished with longish prominent white bristly hairs; on either side of the caput, below the small eye of the second row, is a group of a few long, strongish, curved, black bristly hairs directed forwards, having a horn-like appearance; and in front of each of these horn-like tufts, but detached from it, is a single bristle of the same nature and having the same direction.

The *eyes* of the front row are pearl-white and encircled with

strong and prominent yellowish scale-like hairs; the eyes of the second row are equidistant from, and in a straight line with, the laterals on either side of the first and third rows.

The *legs* are moderately long and strong, and do not differ greatly in length; their relative length is apparently 3, 4, 1, 2; and their colour is yellow clouded in parts with yellow-brown; they are furnished with spines, bristles, and hairs, of which some are fine and white.

The *palpi* are neither very long nor strong; their colour is yellow, that of the digital joint being yellow-brown; the fore part of the humeral joint, as well as the upperside of the cubital, is clothed with white bristly hairs; the radial is shorter than the cubital, and has some long, strong, bristly white hairs above, rather in a tuft, on the inner side, and with a decided inward direction; the outer extremity of this joint is produced into a short strong apophysis, hollowish on the inner side, and very obtuse at its termination, which appeared to be slightly indented; the digital joint has its upperside clothed with blackish and white hairs; it is of moderate size and ordinary form; and the palpal organs are well developed and prominent, but simple in structure, consisting of a large oval corneous lobe, whose inner side is encircled (just beneath the edge of the digital joint) with a strong black spine which issues from their base.

The *abdomen* is of the ordinary form; it is of a dark yellow-brown colour above, clothed with yellow-red hairs; the fore margin has a large transverse oval band or patch of white hairs; and there is another conspicuous patch of the same (formed by two or three confluent angular bars) rather behind the centre of the upperside; the sides are pale yellowish; and the underside has a broad central longitudinal yellowish-brown band throughout its length.

The *female* in general characters resembles the male; but the cephalothorax is more variegated and diversified in appearance, having a longitudinal stripe of white hairs down the centre of the hind slope, and reaching forwards to the middle of the caput; there are also some dark brown markings on the sides and hinder part of the cephalothorax, which appear through the clothing of hairs (probably the cephalothorax of the male had been partially denuded of hairs). In the female the abdomen has the upperside dark brown-black, indented on the sides near the spinners by one or two short yellowish lines or encroachments from the sides; the centre is (longitudinally) of a yellowish colour; and the fore part is divided in the same direction by a black stripe, club-shaped at its termination, with a black spot on either side about the middle; following this black stripe are the pale chevrons observable on the male.

An adult male and female, with an immature male, were found among stones at Jerusalem.

SALTICUS PASCUALIS, sp. nov.

Male adult, length $1\frac{1}{3}$ line.

The *cephalothorax* is of a rather flattened form, and longer than in many other species of this group; the hinder slope is also less

abrupt; the fore part projects over the base of the falces; and it is of a glossy black colour. The eyes of the second row are each rather nearer to the eye on its side of the third row than to the lateral on the same side of the first, but are in the same straight line.

The *legs* are moderate in length and strength; those of the first pair are the longest and strongest, but not inordinately so; their colour is dark brown, the tarsi of the two hinder pairs being pale yellow; and they are furnished with hairs, spines, and a terminal claw-tuft.

The *palpi* are short, the humeral and cubital joints yellow, and they are furnished with white hairs; the radial is brown, shorter than the cubital, and produced at its outer extremity into a rather long, slender, slightly tapering, curved, and rather prominent apophysis, whose point is slightly hooked or crotchet-formed. The digital joint is rather large, of a brown-black colour, and has a strong circular indentation or impression at its extremity; the palpal organs are large and prominent, and extend backwards beneath the radial joint.

The *abdomen* is of ordinary form; its colour is brown-black, with some white squamose hairs towards the fore extremity of the upper-side, and some indistinct pale angular lines or chevrons on the hinder half. The superior spinners are white, tipped with black, the inferior ones black.

A single example of this small but distinct species was found among dwarf herbage at the village of Nain, on the road from Jezreel to Nazareth.

SALTICUS CLEMENS, sp. nov.

Female adult, length $2\frac{3}{4}$ lines.

The *cephalothorax* of this Spider is of the ordinary form; its colour is yellow, with a paler patch on the occiput; the upper surface of the caput, or the ocular area, is strongly suffused with black; and there are several slightly converging black streaks on the hind slope; the sides also are a little tinged with brown-black.

Each of the *eyes* of the second (or intermediate) row is rather nearer to that on its side of the hinder row than to the lateral on the same side of the front row, but is in the same straight line. The *legs* and *palpi* are yellow; the former differ but little in length; they are moderately long and strong, and are furnished sparingly with hairs and fine spines. Each tarsus ends with a small claw-tuft. The *falces* are small, conical, and, with the labium, maxillæ, and sternum, also of a yellow colour.

The *abdomen* is of a duller yellow colour than the cephalothorax, and is finely and thickly striated in a longitudinal direction with dusky yellow-brown. A central longitudinal paler band (being freer from these striations) is indistinctly visible on the upperside, and is divided near its fore extremity by a short red-brown longitudinal line, trifid at its hinder extremity, and followed by several dull yellow-brown angular bars or chevrons. The intermediate spaces between these chevrons are perhaps more prominent and observable than the

chevrons themselves, and, together with the space before the outer limbs of the trifold portion of the red-brown line, are perhaps more calculated to catch the eye as the distinctive pattern than if we take the yellow portions to be the ground-colour, and describe the pattern as brown. The abdomen is clothed thinly with short yellowish and greyish hairs, with a few long blackish recurved ones on the fore part of the upperside.

A single adult female of this Spider, which is allied to *S. frontalis* (Walck.), *S. reticulatus* (Bl.), and *A. gambosus* (Sim.), was found on low plants on the plains of the Jordan.

SALTICUS CONVENIENS, sp. nov.

Male adult, length 2 lines.

The *cephalothorax* of this species is massive, but when looked at from above and behind is of the ordinary form; in profile, however, the centre of the ocular area is transversely and perceptibly higher than the rest, which thus slopes pretty sharply forwards to the front row of eyes; it is jet-black, with a large oblong area running from the hinder eyes to the lower hind margin, densely clothed with fine sandy-yellow hairs or coarse pubescence; and the whole of the surface of the cephalothorax, especially the ocular area and the margin of the clypeus, is furnished with prominent black bristly hairs, directed forwards.

The *eyes* of the second row are very minute and difficult to be distinguished; each of them is nearer to the hinder eye on its side than to the lateral on the same side of the foremost row, but is very nearly in the same straight line with these, very slightly, if any thing, within it.

The *legs* are rather long and moderately strong; their relative length is apparently 3, 4, 1, 2; and they are furnished pretty freely with long hairs (both black, white, and yellowish) and with spines; they are of a yellow colour, irregularly marked and spotted with blackish brown; and each tarsus ends with a black claw-tuft.

The *palpi* are neither very long nor strong; their colour is yellow, thickly clothed with short, strong, bristly white hairs; the radial joint is shorter than the cubital, and has its outer extremity produced into a very short but strongish apophysis, bluntish-pointed at its extremity, which is bent downwards; the digital joint is not large; it is of the ordinary form, but is abruptly truncated at its extremity, the truncated part apparently depressed and fringed over thickly with an edging of fine whitish hairs; the palpal organs are highly developed and very prominent, though simple in structure; their hinder portion is nearly globular, and extends backwards to the underside of the cubital joint; their fore part is depressed and somewhat pointed. The *falces* are small, conical, and of a black-brown colour.

The *abdomen* is of the ordinary size and form; its ground-colour is black, but (when not rubbed off) it is densely clothed with a dull reddish sandy-yellow pubescence of short hairs; the hinder part of the upperside has faint indications of a double longitudinal series of alternate paler yellowish and brown-blackish spots; and there are

some long, black, recurved, erect, bristly hairs on the fore part of the upper side.

This plainly marked but distinctly characterized Spider is possibly the male of *A. candidus* (Sim.), which is found in the same locality.

A single adult male was met with among stones at Jerusalem.

SALTICUS COGNATUS, sp. nov.

Male adult, length $2\frac{3}{4}$ lines.

This Spider nearly resembles, and is exceedingly closely allied to, the last-described species, *S. conveniens*; it is, however, larger. The *cephalothorax* is flatter (*i. e.* the slope forwards, from the middle of the ocular area to the front row of eyes, is much less abrupt, the profile line of the caput forming a more gentle and regular curve); the cephalothorax is jet-black, but is entirely without pubescence. This character seemed to be constant in all the ten examples met with, and therefore is not, I think, due to denudation.

The *abdomen* is black, clothed with a reddish-yellow pubescence, similar to that of *S. conveniens*, and very liable to partial denudation, but it was quite unicolorous; in no example was there any trace of either pale or dark spots on the hinder half.

The *palpi* are remarkably similar to those of *S. conveniens*, but the apophysis at the outer extremity of the radial joint seems to be rather stronger and not bent downwards. The general hue and appearance of the *legs* is darker than in the other species named, while in some examples there is a large proportion of white hairs and pubescence on them.

Ten examples of the adult male were found among stones and rocks and dwarf plants near Ain-Ata, on the skirts of the Lebanon.

SALTICUS POLITIVENTRIS, sp. nov.

Male adult, length 2 lines.

This species, though so very different in appearance, is certainly closely allied to both *S. conveniens* and the species next to be described (*S. approximans*).

The *cephalothorax* is large; its highest part is in a line with the two hindmost eyes, whence it slopes both backwards and (more sharply) forwards; there is also a strongish indentation close behind each of those eyes; it is glossy, of the deepest black-brown, with the ocular area quite black, and a broad marginal band of white hairs, occupying nearly the whole of the sides of the cephalothorax, and running completely round it in front close beneath the eyes of the foremost row. Occasionally an example occurs with this band raised above the margin, showing a brown-black band between it and a narrow white marginal line. Each of the eyes of the second row is, if any thing, slightly nearer to the fore lateral eye on its side than to the hind lateral, but is in the same straight line with them.

The *legs* are rather long and tolerably strong; those of the first and second pairs are the strongest, but not excessively so; and they are furnished with hairs (both white, yellowish, and black) and spines;

their colour is yellow, slightly suffused in parts with brownish ; and each tarsus terminates with a black claw-tuft.

The *palpi* are of moderate length and strength ; they are of a yellow colour, except the humeral joint, which is brown, and the digital, which is still darker ; the humeral, cubital, and radial joints are thickly clothed with longish bristly white hairs ; the radial is shorter than the cubital, and has its outer extremity produced into a short, strong, reddish-brown, blunt-pointed apophysis, its point bent downwards ; the digital is of ordinary form, somewhat obliquely truncated at its fore extremity, the truncated part having a fringe of convergent whitish hairs : the palpal organs are of a deep brown colour, very prominent, but of simple structure ; they are of a somewhat globular shape, extending far backwards in a pointed form to the underside of the cubital joint. The *falces* are small, conical, retreating, and of a deep brown colour.

The *abdomen* is short, but of a broad, flattened, oval form, truncated in a somewhat straight line in front, and rounded behind ; its upper surface has a corneous appearance, and is of a brilliant glossy dark steel-blue-black colour ; the sides and underside are yellowish white, clothed with grey hairs ; the sides also have some short longitudinal, blackish, dash-like spots or markings ; the steel-blue upperside resembles a sort of plate or covering, which does not extend backwards quite to the spinner.

All the examples met with were males ; and it appeared to be the most abundant of the *Saltici* on the plains of the Jordan, among stones and dwarf stunted plants ; it was also found in various other parts of Palestine and Syria. I suspect that the *A. canescens* (Sim.), if not the female of *A. conveniens*, must be that sex of the present species, different as it appears to be in the nature of the abdominal integument. Probably *A. canescens* includes the female of both these species, as well as *S. approximans* ; for the respective males are very nearly allied in structure, and their females would most likely be very difficult to separate, although the adult males present very good distinctive characters. The present species is also probably closely allied to *S. nitidiventris* (Luc.), but it differs in several strong specific characters.

SALTICUS APPROXIMANS, sp. nov.

Male adult, length 2 lines.

In size and general form this species resembles *S. politiventris*, to which it is certainly nearly allied ; but the *cephalothorax* has, besides the broad marginal band of white hairs, a similar white spot behind each lateral eye of the front row, and an oblique, short, white bar or band of the same nature on the occiput behind each eye of the third row.

The *legs* are similar in colour to those of the foregoing species, as are also the *palpi* ; but I could not discover any apophysis at the outer extremity of the radial joint ; and there appeared to be no truncation at the extremity of the digital, which was of the same colour as the other joints ; but the palpal organs are very similar.

The *abdomen* is less flat on the upperside and more pointed behind; and instead of being polished above like that of *S. politiventris*, it is clothed with dull yellowish-brown hairs and a transverse band of scaly white ones on the fore margin; the underside is yellow-white, which unites gradually with the colour of the upperside by small, short, brown streaks.

A single adult male was found on the plains of the Jordan.

SALTICUS ÆRATUS, sp. nov.

Female adult, length 2 lines.

This Spider has the *cephalothorax* of ordinary form; the ocular area is quite flat, and there is a strong indentation behind each of the eyes of the third row; the hind slope is also very abrupt; its colour is deep brown, tinged with reddish, the ocular area being black, and the whole thinly clothed with a fine whitish pubescence and a few fine erect hairs; each of the eyes of the second row is the same distance from the fore lateral as it is from the hind lateral on its side, but is a little within their straight line.

The *legs* are moderate in length and strength, their relative length being 4, 1, 3, 2; they are yellow in colour, clouded, marked, and striped irregularly with blackish brown; they are furnished with hairs and spines, and each tarsus ends with a small claw-tuft.

The *palpi* are yellow, the humeral joint clouded with black-brown, and there is a conspicuous black spot at the base on the foreside of each of the radial and digital joints.

The *abdomen* is oval, and projects greatly over the base of the cephalothorax; its colour is black, thinly clothed with hairs, some of which (especially in front and on the sides) are whitish, and others give it a brassy appearance in different lights; the underside is dull yellowish, with a large central, somewhat quadrangular brown marking.

An example of this species was found among dwarf herbage on the plain of the Jordan.

SALTICUS SPINIGER, sp. nov.

Male adult, length $2\frac{1}{4}$ to $2\frac{1}{2}$ lines.

The *cephalothorax* is rather elongate and flattened; the ocular area does not occupy much more than one third of its entire length; and the hind slope is gradual; it is of a bright reddish yellow-brown colour, margined with black, and the ocular area is strongly clouded with the same; the whole (especially the ocular area) is clothed with golden, grey, and other pubescent hairs, mixed together, and giving it a variegated appearance; a few prominent black hairs, curved forwards, are also scattered over its surface; on the sides of the caput, close beneath the lateral eyes, is a longitudinal series of small blackish tubercles, each surmounted by a short bristle. Each of the eyes of the second row is rather nearer to the hind lateral than to the fore lateral on its side, and is within their straight line.

The *legs* of the first pair are considerably the longest, and the femora, tibiæ, and genua are inordinately strong, compared with the

rest; these legs are of a reddish yellow-brown colour, the others being pale yellowish, tinged with brown; their relative length is 1, 4, 3, 2; and all are thinly furnished with hairs, many of which (especially those on the first pair) are long, fine, and prominent; the metatarsi of the first pair have four (2, 2) short black spines beneath them, and there is another single pair close together, near the extremity, beneath the tibiæ of the same legs. Each tarsus ends with a small claw-tuft.

The *palpi* are short, similar in colour to the legs of the first pair, moderately strong, but of remarkable structure in the radial and digital joints; the cubital and radial joints are both very short; the latter is the shortest, and has a long cylindrical, nearly vertical apophysis issuing from the underside; this apophysis is quite (if not more than) double the length of the joint itself, and terminates rather abruptly in a dark red-brown sharp point; the digital joint is large and long, rather abruptly narrowed forwards, where it is bent downwards; its extremity is truncated; and its convex side is directed outwards; and consequently the palpal organs of each palpus are directed inwards towards each other; they are highly developed and prominent, consisting of a large, somewhat pyriform, corneous lobe (the large end behind), with a small prominence near the middle; a long, strong, black spine issues from the fore extremity of this lobe, on the outer side, and sweeps round backwards with a large bold curve, coiling round on the inner side of the palpal organs, and having its acute filiform point in contact with their extremity, close to its origin; the coil of this spine extends quite to the hinder extremity of the radial joint, and is a very conspicuous character of the species. The *falces* are tolerably long but slender, and rather directed forwards.

The *abdomen* is rather large, of an oval form, slightly flattened; it is of a yellow-brown colour above, clothed with short white hairs in front and on the sides; there are some whitish-yellow markings forwards, an obscure series of broken chevrons behind in the central longitudinal line, and some broken, irregular, oblique stripes on the sides; the underside is whitish.

The *female* resembles the male in colour and markings, which, however, are more distinct than in the latter sex. The relative length of the legs appears to differ in the two sexes, those of the fourth pair being the longest in the female, while those of the first are the longest in the male.

Immature examples of both sexes were found on trunks of olive trees at Hebron and Jerusalem; and in 1864 adults of both were met with on the trunks of palm trees in Egypt. It is from some of the Egyptian examples that the above description has been made; but there is no doubt whatever of the specific identity of the Egyptian and Palestine examples.

SALTICUS FULGENS, sp. nov. (Plate XIV. fig. 17.)

Male adult, length $1\frac{1}{4}$ to $1\frac{1}{2}$ line.

The *cephalothorax* of this beautiful and brilliant little Spider is of